WORK MANAGEMENT MANUAL - BLAST AND PAINT GENERAL

BLAST AND PAINT WORK

Performed in

BLAST AND PAINT BUILDING

Prepared for:

SNAME Panel SP-8
MARAD Task ES-8-11
Under the direction of
H.E. Nesnard & Co.

Prepared by:

Industrial Engineering Dept.
Peterson Builders Inc.
Sturgeon Bay, Wisc.
August, 1963

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
AUG 1983	**N/A**	**-**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Work Managemaent Manual - Blast and Paint General	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Naval Surface Warfare Center CD Code 2230 - Design Integration Tools Building 192 Room 128 9500 MacArthur Bldg Bethesda, MD 20817-5700**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release, distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**SAR**	**279**	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18

WORK MANAGEMENT MANUAL

BLAST/PAINT GENERAL

INDEX

SECTION 1
SCOPE

The scope of this manual will encompass all blast and paint activities performed in the blast and paint booth.

While the data collected for this manual was procured from the ARS's, special attention was given to its development so as to the applicability for painting ans ship.

1.1 PLANT AREA, DEPARTMENT, WORK CENTER, COST CENTER

A. Plant Area
Peterson Builders Inc,
Sturgeon Bay, Wisc.

B. Department
Blast and Paint Dept.

C. Work Center
1. Blast Booth
2. Paint Booth

1.2 PRODUCTS AND COMPONENTS

A. Products

1. All sub-assemblies and miscellaneous small parts painted before installation

1.3 MATERIALS

Abrasive Grit

1. Steel Grit
a. G-50

Paint

1. Epoxy
a. 3000 Series
b. 4032 Shop Primer

.B8 .4 OPERATIONS

1. Strip Blast
2. Full Blast
3. Painting w/Pressure Pot
4. Painting w/Cup

SECTION 2
STANDARD PRACTICES AND POLICIES

2.1 CARE OF EQUIPMENT AND WROK AREA

The operator assigned to the particular work station is responsible for the lubrication, minor maintenance, and cleanliness of the equipment at the work station and for the cleanliness of the area in and around the work station.

2.2 QUALITY CONTROL AND INSPECTION

Inspection of work in process and final inspections are conducted in accordance with FBI Standard Procedure No. 6.

1. General Requirements:

(a) The Chief Engineer provides contract data, specifications, drawings, lists of material and other services and technical data required for procurement, production testing and inspection of materials and equipment.

(b) The Purchasing Merit procures material, equipment, subcontract services and vendor technical data to support Production and inspection shedules.

(c) The Production Control Manager schedules production, inspection, testong *and* trials and prepares the work order packets which contain production instructions.

(d) The Quality Assurance Manager Provides specific inspection, testing, and trial data as required.

2. Quality Planning:

(a) The Chief Engineer reviews contract data, specifications, drawings and vendor technical data to determine Quality requirements, The requirements for the purchase of materials are provided to the Purchasing Agent on the List of Material. The requirements for fabrication and construction are provided to the Production Control Manager on the List of Materials, Special requirements for inspection and testing are provided to the Quality Assur-

ance Manager for use in preparing inspection and test procedures.

(b) The Production Control Manager assembles the work order packets which include the List of Materials, drawings, inspection instructions, test procedures and other pertinent information for distribution to Production Superintendents. The Production Control Manager also prepares and coordinates the production schedule.

(c) The Quality Assurance Manager will review contract data, specifications, drawings and other technical data for quality requirements and prepares inspection instructions and test procedures which then are included in the work order packet. Special tests for performance by the manufacturer or vendor also are determined. These requirements are coordinated with FBI Engineering, FBI Purchasing and the manufacturer or vendor, and will be included on the purchase requisition to become part of the purchase order.

3. General Procedures:

(a) The chief Engineer Provides to the Quality Assurancee Manager the contract data, specifications, drawins, and other technical data required to conduct in-process inspections and tests, The Chief Engineer is responsible for ersuring that all data provided is current, complete and accurate.

(b) The Purchasing Agent procures certification, or test data, as required, from vendors. This information is acquired to verify that material used in production complies with contract specifications and drawings.

(c) The Production Control Manager prepares the work order packets, the testing and the production schedules. The work order packets are distributed to the appropriate Production Superintendent in accordance with the production schedule.

(d) The Quality Assurance Manager prepares an index of tests, identified to each appropriate work order. He also prepares any special inspection instructions which may be required but which are not included in other data provided with the work order.

4. In-Process Inspection:

Early in each contract, Quality Assurance personnel review the specifications, drawings, and other technical data and record in-

spection and test characteristics. These characteristics are broken down by work order and are used by the Quality Assurance Inspector for check-off lists when conducting the in-process inspections.

(a) The Quality Assurance Manager is responsible for assuring that production elements meet design specifications. He has authority to reject any item which does not meet specifications and to halt any production activity which does not conform to established Quality Standards.

(b) The production Supervisor responsible for a work order is also responsible for conduct day-to-day inspection of work in progress, He reports any discrepancies or problems to the appropriate Production Superintendent. Discrepancies found in drawings are reported to the Chief Engineer on a Field Engineering Change Request so that the drawing may be updated to reflect actual configuration.

5 Final Inspection

When specific inspections or tests are requied prior to completion of a work order, they are noted on the work order, before the work. is moved or the work order signed off, a final inspection is made.

(a) The Quality Assurance Inspector witnesses final inspections and tests. When a Government Representative, Owner Representative or Regulators Agent wishes to witness inspection, the Quality Assurance inspector makes the makes the necessary arrangements.

(b) The Quality Assurance Inspector annotates inspection results on the work order or Inspection Report, as appropriate, If discrepencies are found during final inspection, they are recorded on the Inspection Report and copies of the report are distributed to responsible and Interested persons fur corrective action, When discrepencies are corrected, the work is reinspected and results are recorded on the Inspection Report.

(c) The Quality Assurance Inspector signs the inspection Report and attaches it to the work order to signify satisfactory completion.

6. Test Requirements:

Contract data, specifications, drawings, and Regulatory Agency rules contain the specific test requirements for the shipboard test program.

(a) The Quality Assurance Manager is responsible for the development of test documentation and for the implementation of the Ship Test Program. Early in a contract, Quality Assurance personnel review test requirements and prepare a comprehensive Test Index. Subsequently, the Test Index and the Production Schedule are combined to produce a Test Schedule. Prior to the performance of any tests, detailed test procedures are prepared and submitted to the Government, Owner, or Regulatory Agent for approval. Required tests are then identified on the work orders.

(b) The Quality Assurance Inspector witnesses all tests, when a Government Representative, Owner Representative, or Regulatory Agent wishes to witness the test, the Quality Assurance Inspector makes the *necessary* arrangements,

(c) The Quality Assurance Inspector completes the detailed test procedure. If discrepancies are found during testing, they are annotated on the test report. Retests are performed after discrepancies have been corrected. When tests are completed and accepted, the test reports are turned in to Quality Assurance Managers. Completed test reports for each ship are assembled in booklet form and are distributed in accordance with contract requirements.

7. Non-Conforming Material:

(a) Items having discrepancies in material or workmanship that do not affect the end use of the item or *system* are corrected immediately, prior to further work on the item or system. This includes such faults as pick-up welding, weld repair resulting from non-destructive tests, improper fit-up, leaks found during piping or compartment testing, paint thickness, etc.

(b) items having discrepancies in material or workmanship that can not be corrected without specific customer approval are rejected. The Quality Assurance Inspector marks rejected material with a red tag. A Quality Assuraance Rejection Notice is PrePared and distributed. Rejected material is removed from the production area to a designated holding area, Rejected material shall not be moved from the holding area until approved disposition has been approved and authorized. Corrective action, including repair, is performed only with approval of the Government, Owner, or Regulatory Agent as appropriate.

(c) Nonconforming incidents of a repetitive nature are investigated to determine the cause and to initate appropriate preventative measures.

3. Quality Assurance:

The Quality Assurance Manager conducts periodic audits of in-process inspection and testing methods to ensure that inspection instructions and test procedures meet the requirements of the contracts specifications.

(a) Inspection and test reports are reviewed for completeness and for accuracy.

(b) Reports on the Quality Assurance System, with recommendations for improvement, are presented to Management periodically.

(c) Communications are maintained with Government Representatives, Owners, and Regulatory Agents, and Dialogues are encouraged.

2.3 MATERIAL SERVICE

1. Receiving, storing, and handling material is under the cosnizance of the Facilities Superintendent,

(a) The Paint Warehouse Man located at the Blast and Paint Shop is responsible for inspection, indentification, storage, handling and issuing of raw materials.

2. Material is transferred from storage to production when requested on a PSI Material Requisition form.

(a) (a) The Material Requisition identifies the material by the description and quantity shown on the List of Materials and by the contract or Job number.

(b) Material designated for a specific contract can only be issued for that contract.

(c) A copy of the Requisition is sent to Material Control to adjust the inventory, and in some cases, to establish the Customer billing price.

(d) A COPY of the Material Requisition is retained by the appropriate warehouse supervisor.

(e) A copy of the Material Requisition is returned to the individual requisitioner.

2.4 SUPPLY AND MAINTENANCE OF TOOLS

Employees are expected to provide and maintain specified personal tools. (Each department has a personal tool list suited for the employees of that department.) The company furnishes other necessary tools on a chip-for-tool basis. Company-owned tools *are* maintained by tool room personnel.

2.5 WORK ASSIGNMENTS

1. Work instructions are prepared by the production Manger bssed on information furnished by the Engineering Department, Purchasing Department, and Quality Assurance Department. Work instructions are recorded on a Production Work Order.

2. Work orders are made up for each item of work on the Work Order List that requires production actions. The work order is issued *approximately two weeks* prior to the scheduled start date for production of each item.

3. Work orders are issued to the appropriate foreman or supervisor via his superintendent. The foreman or supervisor is responsible for reviewing the work order, including the drawings, bill of material and other production and quality control instructions provided with the work order. The foreman or supervisor is responsible for requisitioning necessary material from stock or storagse.

4. The Production Manager monitors work order progress on a continuing basis. Periodic meetings are held to resolve trouble areas. Inspection of work in-process and final inspections are conducted in accordance with PBI Standard Procedure No. a.

5. Repair or materialWhich has been found to be non-coforming and which is approved for repair is authorized by Rework and Repair Order. Copies of all Work Orders and Rework and Repair Orders are kept in the Production Manager's files.

6. Completed work orders, including marked up drawings, bills of material, comments and signatures are returned to the Production Manager via the appropriate Superintendent. The Production Manager provides Engineering with the marked up drawings and list of materials. Completed work orders are kept in the Production Manager's file for further reference.

2,6 TIME AND PRODUCTION REPORTING

Each Leadman is responsible for reporting to his foreman on a daily basis the work started and/or completed. The foreman is responsible for submitting a daily work card for each Leadman and Fitter. On the daily work card is the employee's name, date, clock number, hull number, job number, department number, number of hours worked on each job, work description, and the foreman's signature. The cards are returned to the Timekeeping Department at the end of each day.

2.8 SAFETY REGULATIONS

PBI, realizing the importance of the safety, health, and welfare of its employees, consistently strives to:

(a) Maintain safe and healthful working conditions.

(b) Ensure consistant adherence to poper operating practices and procedures designed to prevent injury and illness.

(c) Encourages conscientious observance of federal, state and company safety regulations.

(d) An Employee's Safety Manual was given to each employee in May, 1981, and will be handed to each new employee at the time of hiring. This manual has been updated in May to the latest guidelines and rules affecting the safety of the employees at Peterson Builders Inc. Management and the employees have a strong commitment to maintain PBI as a safe place to work.

2.9 SUPERVISORY RESPONSIBILITIES

1. Supervisory Responsibilities:

(a) The foreman supervises all Leadman, Painters and Sandblasters. He is responsible for implementing the work orders throush the Leadman and for seeing that the work orders are completed on schedule. He is also responsible for requisitioning necessary material from stock or storage.

(b) The Leadman supervises the Painters and Sandblasters on the job, He is responsible for ensuring that the Painters and Sandblasters have the necessary tools and materials to complete the Job. He is responsible to the foreman for the production and conduct of the painters and Sandblasters assigned to him. He answers on the job questions when the foreman is not present, and performs some on-the-job duties.

2. Levels of Direct Management:

   (a) Paint and Blast Superintendent
   (b) Department Supervisor
   (c) Foreman
   (d) Craft Leadman

3. Area of Responsibility

   (a) Blast Booth
   (b) Paint Booth

4. Craft Worker Classification:

   (a) Painter
   (b) Blaster

SECTION 3
FACILITIES AND EQUIPMENT

3.1 PRODUCTION EQUIPMENT AND SPECIFICATIONS

3.2 AUXILIARY EQUIPMENT

3.3 MATERIALS HANDLING EQUIPMENT

FACILITIES & EQUIPMENT

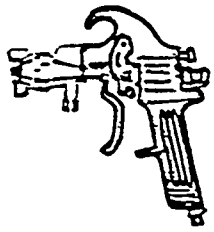
PAINTING

PRESSURE FEED GUN MODEL 62

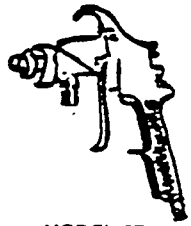
CUP TYPE GUN MODEL 7

MODEL 7

MODEL 15



MODEL 18



MODEL 37

REFERENCE CHART

NOZZLE NO	ORIFICE SIZE
D920**	020
JA*	043
J1*	.082
J2*	.043
J520**	.020
J930**	.030
J540**	.040
J960**	.060
33	040
33B	046
33D	.052
35	059
36	.070
37VT†	.081
38	086
38VT†	099
41VT†	120
44*	.187
45*	.250
46*	.312
47*	.375
49*	.500
59A*	.171
59B	.218
59C*	.281
61	.022
62	022
63	.028
63A	.040
63B	.046
63C	.052
63CVT†	.052
64VT†	064
65	059
66	070
67	.086
67VT†	086
68	.110
68VT†	110
69E	125
76	040
77	052
78	070
81*	040
83*	059
86	070
420**	020
428**	028
440**	040
446**	.046
452**	.052
459**	059
794*	040

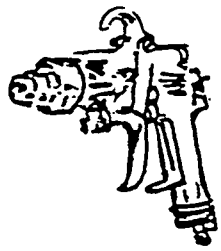
*FAUC NOZZLES ARE AVAILABLE IN STAINLESS STEEL

**FAUC NOZZLES ARE FLAME SPRAYED STAINLESS STEEL

†FAUC NOZZLES ARE STAINLESS STEEL WITH TUNGSTEN CARBIDE INSERT

MODEL 380

MODEL 61



MODEL 62

MODEL L240

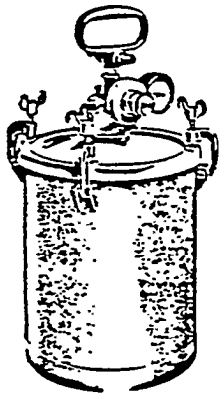
PRINTED IN U.S.A. 3/75

Pressure feed tanks

TYPE QN PRESSURE FEED TANK (2 gallon capacity)

Economical tank for use with no more than 50 pounds pressure. Welded steel tank construction. Tight fitting, gasketed lid with four forged steel clamps. Air inlet and outlet ¼" NPS (M) Fluid outlet ⅜" NPS (M). Ship Wt. 14 lbs.—Export: 34 lbs.; 2½ cu. ft. (Non O.S.H.A. Compliance)

QN-5003 Pressure Feed Tank, complete with pressure regulator & gauge.



Accessories

QSR-501

QS-5001

QS-508

P-QM-4092

P-VS

KK-6109

Hand Agitators—Simple device for mixing materials in tank. Can be ordered assembled in tank or separately. Give tank type and serial number when ordering agitators only.

QS-5001 Air Motor Drive—Powerful, smooth running. Mounts on hand agitator shaft of any size tank. Low air consumption, approx. 6 cfm at 50 rpm. Includes throttling valve, fittings and hose for connecting to air supply on tank lid.

QS-5011 Air Motor Drive—Same as QS-5001, except with heavy duty air motor.

QSR-501 Reciprocating Air Motor Drive—Low air consumption motor mounts easily on tanks equipped for material agitation. Slow back and forth motion ensures proper agitation. Includes mounting clamp and air supply hose with shut-off valve and connecting "T".

QS-508 Electric Motor Drive— ¼ horsepower gear head motor and adapter housing mount on hand agitator shaft of any size tank except 2 gallon. Drives agitator at 58 rpm. Available with either explosion proof or totally enclosed motors.

Insert Containers—Metal pails that are used inside pressure feed tanks. Protect tank and material. Made of different metals to meet the requirements of a wide range of fluids.

VA-526 Stainless Steel Fluid Valve—for use on catalyst tanks containing materials that are difficult to hold, such as M.E.K. peroxide. Ball type valve construction; stainless steel, hard chrome plated; teflon seals; stainless steel nipple and coupling.

71126-607 Disposable Liners—for 2 gallon QM or QN tanks. Tough, leak-proof construction. Made of polyethylene. Available only in packages of five.

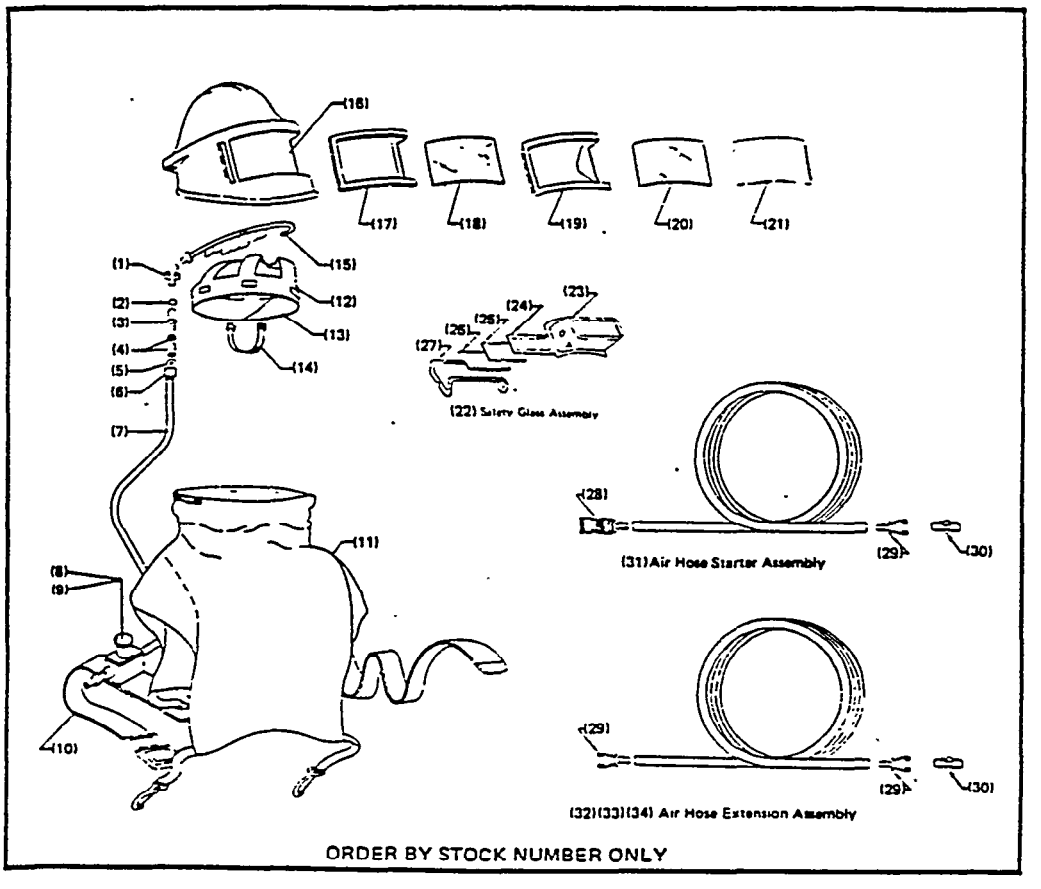
P-QM-4092 Air Regulation Kit—Adapts to tanks equipped with single regulator to provide independent pressure control of atomization air and fluid pressures.

Material Strainers—Attaches between tank outlet and fluid hose. Material forced through fine mesh screen. Easily removed and cleaned. ⅜" NPS (M) x ⅜" NPS (F).

P-VS-506 100 Mesh; P-VS-518 80 Mesh; P-VS-516 60 Mesh. P-VS-519 60 Mesh, stainless steel.

KK-6109 Oil & Moisture Separator Mounting Kit—Includes adapters, air hose, and bracket for mounting separator to any 5, 10, or 15-gallon tank. Order HRE-501 separator additionally.

REPLACEMENT PARTS



ORDER BY STOCK NUMBER ONLY

ITEM	DESCRIPTION	STOCK NO.
(—)	Helmet assembly (Ref. No 46-01)†	41PCE 0989
(1)	White inlet elbow with washer	41PCE 0990
(2)	Outer washer	41PCE 1029
(3)	White inlet fitting with screen and filter	41PCE 0993
(4)	Polyurethane filter with screen	41PCE 1021
(5)	Adaptor washer	41PCE 1009
(6)	Threaded hose connector	41PCE 1030
(7)	Air hose with fittings	41PCE 1007
(8)	Belt/brass valve complete (Ref. No 46-4HP)†	41PCE 1004
(9)	Break valve only	41PCE 1005
(10)	Belt only	41PCE 1006
(11)	Outer cape, green (Ref. No 56-3-G)†	41PCE 1003
(12)	Adjustable headband with sweatband	41PCE 0994
(13)	Chinstrap	41PCE 0996
(14)	Sweatband	41PCE 0995
(15)	Air distribution tube with fitting	41PCE 1001
(16)	Window latch assembly (not shown)	41PCE 1022
(17)	Molded rubber window gasket	41PCE 1035
(18)	*Inner acetate lens, 4-5/8" x 8-11/16" (.040" thick)	41PCE 1037

ITEM	DESCRIPTION	STOCK NO.
(19)	Window frame with pin	41PCE 0992
(20)	*Outer acetate lens, 5" x 10¼" (.040" thick)	41PCE 0999
(21)	*Mylar lens	41PCE 1000
(22)	Safety glass assembly (optional)	41PCE 1010
(23)	Safety glass window frame	41PCE 1011
(24)	Safety glass lens gasket	41PCE 1012
(25)	Laminated safety glass	41PCE 1013
(26)	Glass cover lens	41PCE 1014
(27)	Glass spring clip	41PCE 1015
(28)	Female quick disconnect fitting	41PCE 1060
(29)	Push-Lok hose end, 3/8"	41PCE 1016
(30)	Adaptor, 3/8" n.t. to 3/8" b.t., brass	15CAP 0022
(31)	Starter air hose, 3/8" x 25' coupled * (Ref. No V-10-25)†	41PCE 1010
(32)	Air hose extension 3/8" x 25' coupled	41PCE 1061
(33)	Air hose extension, 3/8" x 50' coupled	41PCE 1041
(34)	Air hose extension, 3/8" x 100' coupled	41PCE 1042

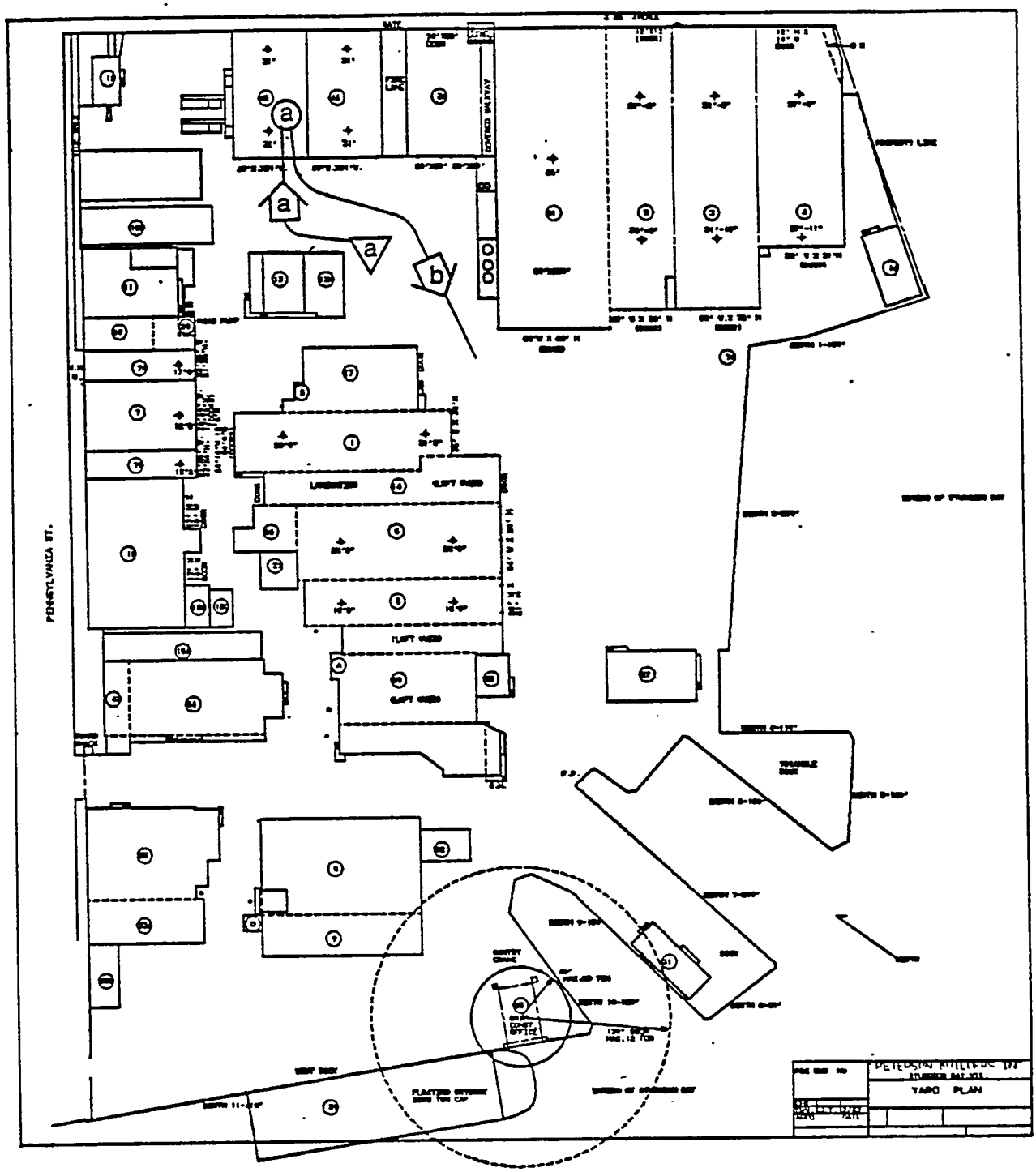
† Reference numbers for MESA/NIOSH approval No. TC 19C-85.
* Recommend spare part

SECTION 4
LAYOUTS AND MATERIAL FLOW

4.1 WORK AREAS

4.2 DEPARTMENT OR COST CENTER LAYOUTS

4.3 MATERIAL FLOW


PENNSYLVANIA ST.
a
a
b
YARD PLAN

FLOW PROCESS CHART

Code: ____________

SUBJECT: MISCELLANEOUS PARTS DATE ____________

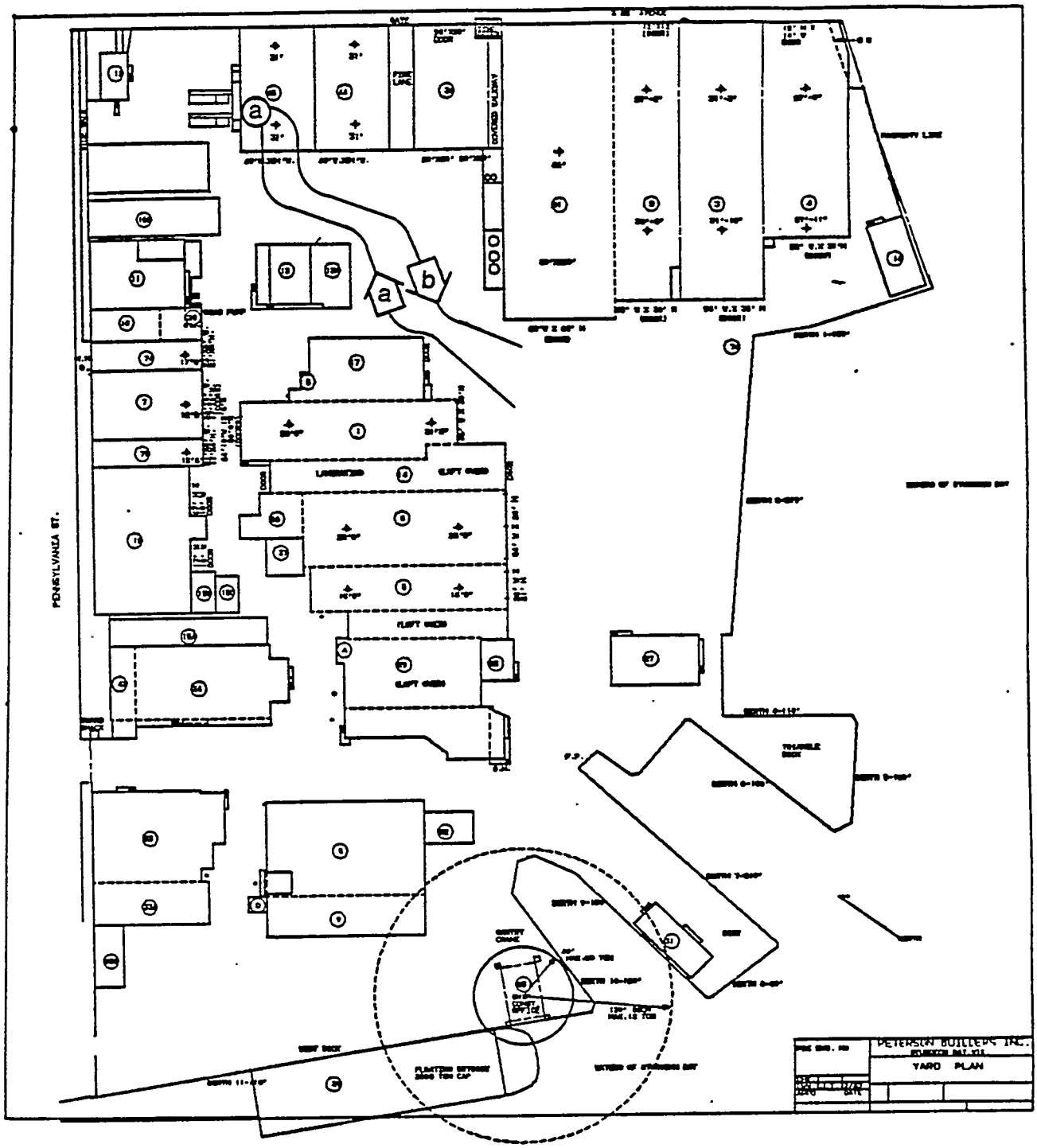
CHART BEGINS: STORAGE

CHART ENDS: ASSEMBLY

SYMBOLS	DESCRIPTION	REF.	DISTANCE MOVED IN FEET	UNIT OPER TIME IN HOURS	UNIT TRANS TIME IN HOURS	UNIT INSPECT TIME IN HOURS	DELAY TIME IN HOURS
○ ⇨ □ D ▽(a)	STORAGE OF SUB-ASSEMBLIES AND MISCELLANEOUS PARTS						
○ ⇨(a) □ D ▽	TRANSPORT TO BLAST BOOTH						
○(a) ⇨ □ D ▽	BLAST SUB-ASSEMBLIES AND MISC PARTS						
○ ⇨(b) □ D ▽	TRANSPORT TO ASSEMBLY						
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							

H. B. MAYNARD AND COMPANY

Sheet ______ of ______ Sheets


PENNSYLVANIA ST.
PETERSEN BUILDERS INC.
YARD PLAN

FLOW PROCESS CHART

Code: ________

SUBJECT SUB-ASSEMBLIES DATE ________

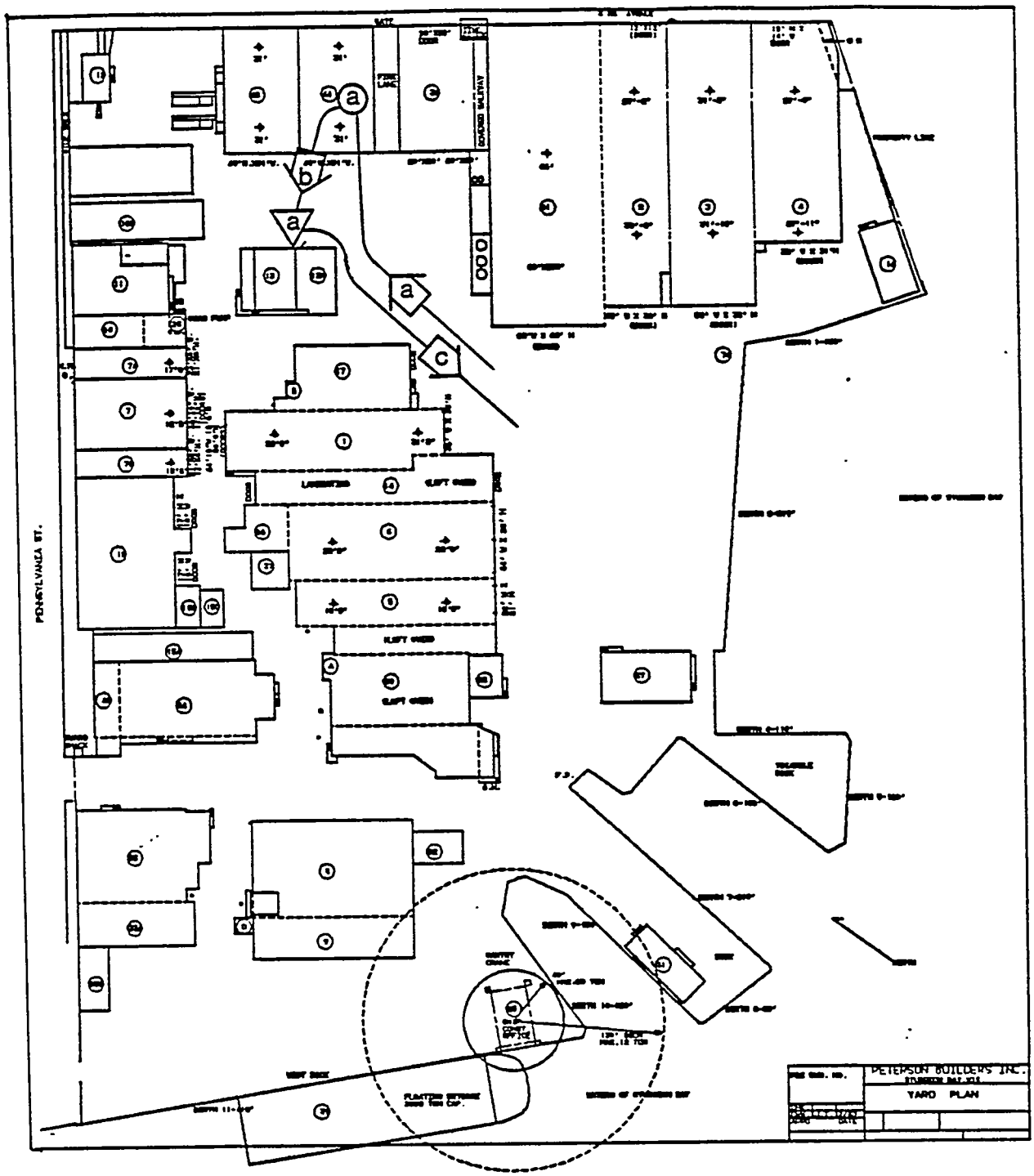
CHART BEGINS SHOPS OR DEPARTMENT

CHART ENDS ASSEMBLY

SYMBOLS	DESCRIPTION	REF.	DISTANCE MOVED IN FEET	UNIT OPER TIME IN HOURS	UNIT TRANS TIME IN HOURS	UNIT INSPECT TIME IN HOURS	DELAY TIME IN HOURS	STORAGE TIME IN HOURS
○ ⇨(a) □ D ▽	TRANSPORT SUB-ASSEMBLIES FROM SHOPS TO BLAST BOOTH							
○(a) ⇨ □ D ▽	BLAST ASSEMBLIES							
○ ⇨(b) □ D ▽	TRANSPORT SUB-ASSEMBLIES TO ASSEMBLY							
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								
○ ⇨ □ D ▽								

H. B. MAYNARD AND COMPANY

Sheet ______ of ______ Sheets


PENNSYLVANIA ST.
PETERSON BUILDERS INC.
YARD PLAN

FLOW PROCESS CHART

Code: _____

SUBJECT SUB-ASSEMBLIES AND/OR MISCELLANEOUS PARTS DATE _____

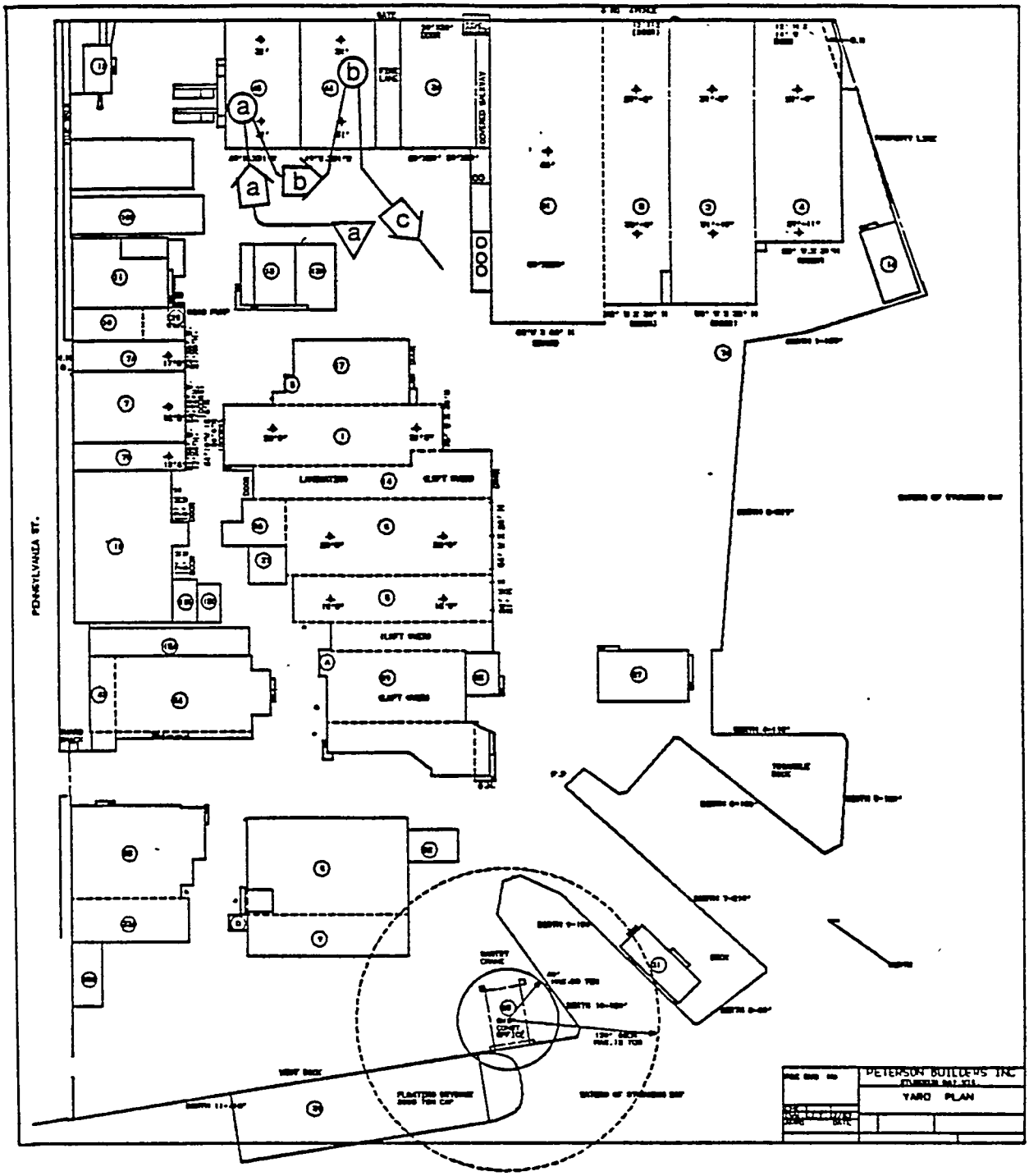
CHART BEGINS SHOPS OR DEPARTMENTS

CHART ENDS ASSEMBLY

SYMBOLS	DESCRIPTION	REF.	DISTANCE MOVED IN FEET	UNIT OPER TIME IN HOURS	UNIT TRANS TIME IN HOURS	UNIT INSPECT TIME IN HOURS	DELAY TIME IN HOURS
○ a □ D ▽	TRANSPORT SUB-ASSEMBLIES AND MISC. PARTS TO PAINT BOOTH						
ⓐ □ □ D ▽	PAINT SUB-ASSEMBLIES AND MISC PARTS						
○ b □ D ▽	TRANSPORT SUB-ASSEMBLIES AND MISC TO TEMPORARY STORAGE						
○ □ □ D d	TEMPORARY STORAGE OF SUB-ASSEMBLIES						
○ c □ D ▽	TRANSPORT SUB-ASSEMBLIES AND/OR MISC PARTS TO ASSEMBLY						
○ □ □ D ▽							
○ □ □ D ▽							
○ □ □ D ▽							
○ □ □ D ▽							
○ □ □ D ▽							
○ □ □ D ▽							
○ □ □ D ▽							
○ □ □ D ▽							
○ □ □ D ▽							
○ □ □ D ▽							
○ □ □ D ▽							
○ □ □ D ▽							
○ □ □ D ▽							
○ □ □ D ▽							
○ □ □ D ▽							
○ □ □ D ▽							
○ □ □ D ▽							
○ □ □ D ▽							

H. B MAYNARD AND COMPANY

Sheet _____ of _____ Sheet


PENNSYLVANIA ST.
PETERSON BUILDERS INC.
YARD PLAN

FLOW PROCESS CHART

Code: _____

SUBJECT SUB-ASSEMBLIES DATE _____

CHART BEGINS STORAGE

CHART ENDS STORAGE AND/OR ASSEMBLY

SYMBOLS	DESCRIPTION	REF.	DISTANCE MOVED IN FEET	UNIT OPER TIME IN HOURS	UNIT TRANS TIME IN HOURS	UNIT INSPECT TIME IN HOURS	DELAY TIME IN HOURS
○ ⇨ □ D ▽ a	STORAGE OF SUB-ASSEMBLIES						
○ a ⇨ □ D ▽	TRANSPORT SUB-ASSEMBLIES TO BLAST BOOTH						
a ⇨ □ D ▽	BLAST SUB-ASSEMBLIES						
○ b ⇨ □ D ▽	TRANSPORT SUB-ASSEMBLIES TO PAINT BOOTH						
b ⇨ □ D ▽	PAINT SUB-ASSEMBLIES						
○ c ⇨ □ D ▽	TRANSPORT SUB-ASSEMBLIES TO STORAGE OR ASSEMBLY						
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							
○ ⇨ □ D ▽							

SECTION 5
PROCESS DATA

5.1 DERIVATION OF PROCESS TIMES

Process Time For Strip Blasting
Single Chamber Blast Machine - Clemco Model SC-3637

The process times shown for both strip and full sandblasting are results of actual field observations made on various dates and times in the Sandblasting Building at Peterson Builders, Inc.

	Square Feet/Minute
Observation No. 1	11.3
" " 2	15.25
" " 3	25.28
" " 4	8.0
" " 5	4.1
" " 6	25.55
" " 7	6.5
" " 8	3.15
" " 9	21.1
" " 10	27.83
" " 11	5.92
	153.98 (rounded to 154)

$$\frac{154}{11} = 14 \text{ square feet/minute average}$$

PROCESS DATA

Process Times For Full Blasting
Single Chamber Blast Machine - Clemco Model SC-3676

The process times shown for both strip blasting and full blasting are results of actual field observations made on various dates and times in the Sandblasting Building at Peterson Builders, Inc.

	Square Feet/Minute
Observation No. 1	10.9
" " 2	10.4
" " 3	3.77
" " 4	7.85
" " 5	10.0
" " 6	2.03
" " 7	3.22
" " 8	8.5
" " 9	3.7
" " 10	13.8
" " 11	11.6
" " 12	5.9
" " 13	3.33
	95.00

$\frac{95}{13}$ = 7.31 square feet/minute average

Process Times For Painting
Epoxy 4032 Shop Primer Applied At 1 Mil.

The Process times shown are for conventional air spraying with pressure pot. The results are from actual field observations made on various dates and times in the Paint Building at Peterson Builders, Inc.

	Square Feet/Minute
Observation No. 1	50.4
2	48.5
3	51.4
" " 4	46.3
" " 5	44.6
" " 6	42.1
" " 7	42.8
" " 8	45.2
	371.8

$$\frac{371.8}{8} = 46.5 \text{ square feet/minute average}$$

SECTION 5

DERIVATION OF PROCESS TIMES

PAINTING CAPACITY PER SHIFT (Small Parts painting)

observations were taken of the painters using conventional air spray methods, from which it was determined that a painter was able to spray 11,000 square feet per shift covering a flat surface. However for small parts painting, where the pieces are placed on 4′ x 8′ plywood sheets, only 6,600 square feet could be attained.

The paint used in the painting booth has 45% solids, is an epoxy type, and is layed down at 1 to 1.5 dry mil thickness which would cover about 600 square feet per gallon.

The painter can spray 10 gallons of paint per shift. The spray paint pots hold about 2½ gallons of which about 2 gallons are used per mix. This will amount to five mixes per shift. It takes about *.16* of an hour to fill the pots and mix the paint. At .16 hours per mix times the five mixes per shift amount to .80 of an hour. Since there isn't any way to pick up this time in the set up because of varying conditions such as number of pieces on the job, size of the pieces, the number of jobs to be run per shift, the time will be pro-rated into the piece time, thus allowing it as needed.

THE PAINTING OF SMALL PARTS

The process for painting small parts involves the loading of these parts on *4′ x 8′* plywood sheets that are supported by wooden horses. While it is possible for the whole booth area to be tied up with this type of set up, the basic work pattern the painter goes through is repeated for each 4′ x 8′ sheet set up. This pattern has been selected to be the basis of the method used to establish labor standards. The procedure for loading pieces involves:

a) place piece on sheet
b) paint one side
c) flop piece
d) paint second side
e) remove piece

The labor standard is based on part size and weight. Vertical heights of pieces over 8" is an add on to the base time. Part size determines the number of pieces that can be loaded on a 4′ x 8′ sheet which determines the painting pattern for the number of passes the painter must take to cover all edges and top area.

Large and free standing are handled with a separate standard time.

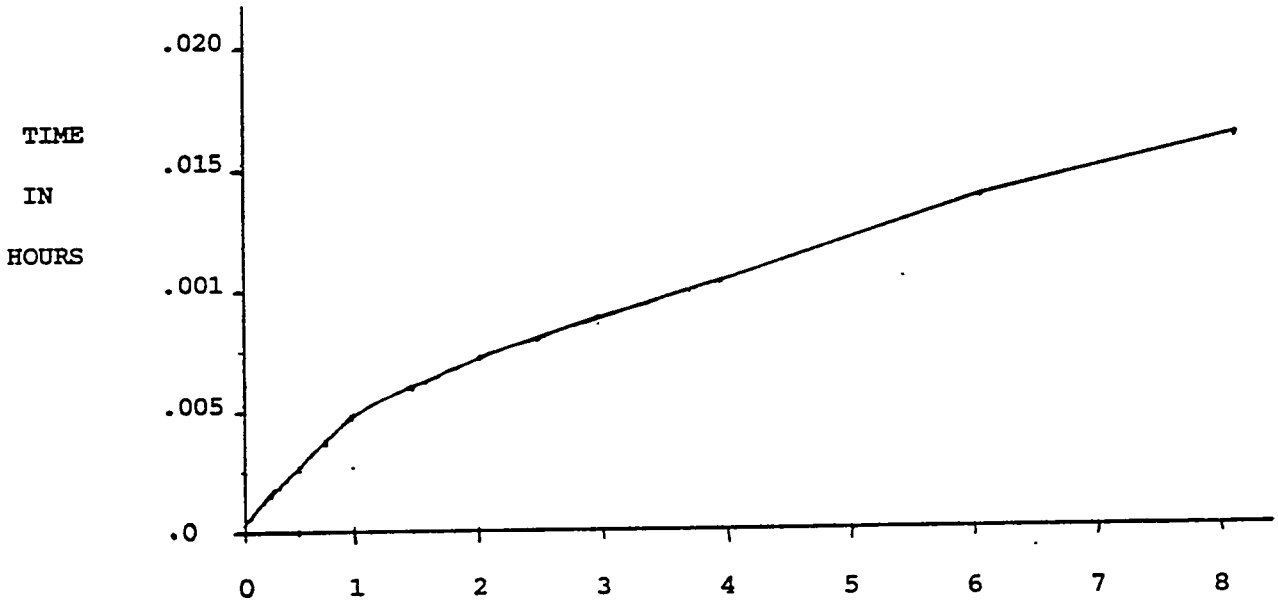
APPLYING STANDARD TIME TO SMALL JOBS

The painting of very small parts may involve such a small amount of time that it may go more than four decimal places to the right of the decimal point. The labor standards on these parts should be figured at 100 pieces instead of one. Example: .00024 hrs/piece would be .024/c (at 100 pieces).

PROCESS TIMES

FOR PAINTING OF SMALL PARTS

*SQ FT	HRS
.25	.00160
.50	.00268
.75	.00376
1.0	.00484
1.5	.00646
2.0	.00700
2.5	.00781
3.0	.00862
4.0	.01024
6.0	.01456
8.0	.01672



*FOR ANY PIECE OVER 8" HIGH YOU MUST ADD THE EXTRA SQUARE FOOTAGE PER PIECE.

NO. OF SQ. FT. _____ X .001 HRS/SQ. FT. = _____ HRS.

STANDARD TIME CALCULATION

SET-UP TIME FOR BLASTING

		HOURS
SET-UP AND TEAR DOWN OF OPERATOR	ICC. NO. 722	.0833
	ALLOWANCE 15%	.0125
	TIME STANDARD	.0958
CLEANUP	LOC. NO. 725	.6924
	ALLOWANCE 15%	.1039
	TIME STANDARD	.7963
PARTIAL CLEAN UP	LOC. NO. 738	.0868
	ALLOWANCE 15%	.013
	TIME STANDARD	.0998

SECTION 7. STANDARD TIME CALCULATION

STRIP BLASTING

FT_2	0-100	101-200	201-300	301-400	401-500	501-600	601-700	701-800	801-900	901-1000
MANUAL TIME	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10
ALLOWANCE *15%	.0115	.0230	.0345	.046	.0575	.0690	.080	.092	.1035	.115
TOTAL	.0215	.0430	.0645	.0860	.1075	.1290	.1500	.1720	.1935	.2150
BLOW-OFF PROCESS TIME	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10
BLASTING PROCESS TIME	.119	.238	.357	.476	.595	.714	.833	.952	1.071	1.19
BLASTING P.T. **ALLOWANCE 5%	.006	.012	.018	.024	.030	.036	.042	.048	.054	.06
TOTAL P.T.	.135	.27	.405	.540	.675	.81	.945	1.08	1.215	1.35
ALLOWANCE *15%	.02	.04	.061	.081	.101	.121	.142	.162	.182	.202
TIME STANDARD IN HOURS	.1765	.353	.530	.707	.883	1.06	1.24	1.41	1.59	1.767

*ALLOWANCES CONSIST OF 5% PERSONAL, 5% FATIGUE & 5% UNAVOIDABLE DELAY.
**ALLOWANCES BASED ON OBSERVATIONS OF BLASTING OFF WELD SLAG (5% X BLASTING P.T.)

SECTION 7. STANDARD TIME CALCULATION

STRIP BLASTING

FT_2	1001-1100	1101-1200	1201-1300	1301-1400	1401-1500	1501-1600	1601-1700	1701-1800	1801-1900	1901-2000
MANUAL TIME	.11	.12	.13	.14	.15	.16	.17	.18	.19	.20
ALLOWANCE *15%	.1265	.138	.1495	.161	.1725	.184	.1955	.207	.2185	.23
TOTAL	.2365	.2580	.2795	.3010	.3225	.3440	.3655	.3870	.4085	.4300
BLOW OFF PROCESS TIME	.11	.12	.13	.14	.15	.16	.17	.18	.19	.20
BLASTING PROCESS TIME	1.309	1.428	1.547	1.666	1.785	1.904	2.023	2.142	2.261	2.38
BLASTING P.T. **ALLOWANCE 5%	.066	.072	.078	.084	.090	.096	.102	.108	.114	.120
TOTAL P.T.	1.485	1.62	1.755	1.89	2.025	2.16	2.295	2.43	2.565	2.70
ALLOWANCE *15%	.223	.243	.263	.283	.304	.324	.344	.364	.385	.405
TIME STANDARD IN HOURS	1.94	2.12	2.30	2.47	2.65	2.83	3.00	3.18	3.36	3.53

*ALLOWANCES CONSIST OF 5% PERSONAL, 5% FATIGUE & 5% UNAVOIDABLE DELAY.
**ALLOWANCES BASED ON OBSERVATIONS OF BLASTING OFF WELD SLAG (5% X BLASTING P.T.)

SECTION 7. STANDARD TIME CALCULATION

FULL BLAST

FT_2	0-100	101-200	201-300	301-400	401-500	501-600	601-700	701-800	801-900	901-1000
MANUAL TIME	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10
ALLOWANCE *15%	.0115	.023	.0345	.046	.0575	.069	.0805	.092	.1035	.115
TOTAL	.0215	.0430	.0645	.086	.1075	.129	.150	.172	.1935	.216
BLOW-OFF PROCESS TIME	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10
BLASTING PROCESS TIME	.228	.456	.684	.912	1.14	1.368	1.596	1.824	2.052	2.28
BLASTING P.T. **ALLOWANCE 5%	.011	.023	.034	.046	.057	.068	.080	.091	.1026	.114
TOTAL P.T.	.249	.499	.748	.998	1.247	1.496	1.746	1.995	2.2446	2.494
ALLOWANCE *15%	.037	.075	.112	.15	.187	.225	.262	.299	.337	.374
TIME STANDARD IN HOURS	.308	.617	.925	1.24	1.54	1.85	2.16	2.47	2.78	3.09

*ALLOWANCES CONSIST OF 5% PERSONAL, 5% FATIGUE & 5% UNAVOIDABLE DELAY.
**ALLOWANCES BASED ON OBSERVATIONS OF BLASTING OFF WELD SLAG (5% X BLASTING P.T.)

SECTION 7. STANDARD TIME CALCULATION

FULL BLAST

FT_2	1001-1100	1101-1200	1201-1300	1301-1400	1401-1500	1501-1600	1601-1700	1701-1800	1801-1900	1901-2000
MANUAL TIME	.11	.12	.13	.14	.15	.16	.17	.18	.19	.20
ALLOWANCE *15%	.1265	.138	.1495	.161	.1725	.184	.1955	.207	.2185	.23
TOTAL	.2365	.2580	.2795	.3010	.3225	.3440	.3655	.3870	.4085	.4300
BLOW OFF PROCESS TIME	.11	.12	.13	.14	.15	.16	.17	.18	.19	.20
BLASTING PROCESS TIME	2.508	2.736	2.964	3.192	3.42	3.648	3.876	4.104	4.332	4.5600
BLASTING P.T. **ALLOWANCE 5%	.1254	.1368	.1482	.1596	.171	.1824	.1938	.2052	.2166	.228
TOTAL P.T.	2.7434	2.993	3.2422	3.4480	3.741	3.9904	4.2398	4.4892	4.7386	4.988
ALLOWANCE 15%	.412	.449	.487	.518	.561	.600	.636	.675	.711	.748
TIME STANDARD IN HOURS	3.40	3.70	4.01	4.27	4.63	4.94	5.24	5.56	5.86	6.17

*ALLOWANCES CONSIST OF 5% PERSONAL, 5% FATIGUE & 5% UNAVOIDABLE DELAY.
**ALLOWANCES BASED ON OBSERVATIONS OF BLASTING OFF WELD SLAG (5% X BLASTING P.T.)

STANDARD. TIME CALCULATION

SET-UP TINE FOR PAINTING

		HOURS
SET-UP AND TEAR DOWN OF OPERATOR	LOC. NO. 723	.0402
	LOC. NO. 736	.0135
		.0537
	ALLOWANCE 15%	.008
	TIME STANDARD	.0617
TRANSPORT PAINT	LOC. NO. 713	.0651
	ALLOWANCE 15%	.0098
	TIME STANDARD	.0749
SET-UP AND TEAR DOWN PAINT EQUIPMENT	LOC. NO. 717	.0168
	LOC. NO. 718	.0427
	LOC. NO. 719	.0426
	LOC. NO. 720	.0403
	LOC. NO. 727	.1882
		.3306
	ALLOWANCE 15%	.0496
		.3802

SECTION 7. STANDARD TIME CALCULATION

PAINTING USING A CONVENTIONAL AIR SPRAYER W/PRESSURE POT

EPOXY PRIMER (4032 SHOP PRIMER @ 1 MIL COVERAGE)

FT_2	0-100	101-200	201-300	301-400	401-500	501-600	601-700	701-800	801-900	901-1000
MANUAL TIME	.0061	.0122	.0183	.0244	.0305	.0366	.0427	.0488	.0549	.0610
CLEANING PROCESS TIME	.015	.030	.045	.060	.075	.090	.105	.120	.135	.150
PAINTING PROCESS TIME	.036	.072	.108	.144	.18	.216	.252	.288	.324	.360
TOTAL PROCESS TIME	.051	.102	.153	.204	.255	.306	.357	.408	.459	.510
ALLOWANCE *15%	.0086	.018	.026	.035	.043	.052	.060	.069	.077	.085
FLAT SURFACE TIME STANDARD IN HOURS	.066	.132	.198	.264	.329	.395	.460	.526	.591	.656
IRREGULAR SHAPE **ALLOWANCE 35%	.023	.047	.069	.092	.115	.138	.161	.184	.207	.230
IRREGULAR SHAPE TIME STANDARD IN HOURS	.089	.179	.267	.356	.444	.533	.621	.710	.798	.886

*ALLOWANCES CONSIST OF 5% PERSONAL, 5% FATIGUE & 5% UNAVOIDABLE DELAY.
**ALLOWANCES BASED ON OBSERVATIONS OF PAINTING IRREGULAR SHAPE COMPARED TO A FLAT SURFACE (35% X PAINTING P.T.)

SECTION 7. STANDARD TIME CALCULATION

PAINTING USING A CONVENTIONAL AIR SPRAYER W/PRESSURE POT

EPOXY PRIMER (4032 SHOP PRIMER @ 1 MIL COVERAGE)

FT_2	1001-1100	1101-1200	1201-1300	1301-1400	1401-1500	1501-1600	1601-1700	1701-1800	1801-1900	1901-2000
MANUAL TIME	.0671	.0732	.0793	.0854	.0915	.0976	.1037	.1098	.1159	.122
CLEANING PROCESS TIME	.165	.180	.195	.210	.225	.240	.255	.270	.285	.300
PAINTING PROCESS TIME	.396	.432	.468	.504	.540	.576	.612	.648	.684	.720
TOTAL PROCESS TIME	.561	.612	.663	.714	.765	.816	.867	.918	.969	1.02
ALLOWANCE *15%	.093	.101	.111	.120	.129	.137	.146	.154	.163	.171
FLAT SURFACE TIME STANDARD IN HOURS	.721	.787	.854	.920	.986	1.05	1.12	1.19	1.25	1.32
IRREGULAR SHAPE **ALLOWANCE 35%	.253	.275	.299	.322	.245	.368	.391	.414	.437	.460
IRREGULAR SHAPE TIME STANDARD IN HOURS	.974	1.07	1.16	1.24	1.33	1.42	1.51	1.60	1.69	1.78

*ALLOWANCES CONSIST OF 5% PERSONAL, 5% FATIGUE & 5% UNAVOIDABLE DELAY.
**ALLOWANCES BASED ON OBSERVATIONS OF PAINTING IRREGULAR SHAPE COMPARED TO A FLAT SURFACE (35% X PAINTING P.T.)

SECTION 7. STANDARD TIME CALCULATION

PAINTING OF SMALL PARTS

SQ FT	.25	.5	.75	1	1.5	2	2.5	3	3.5	4	6	8**
MANUAL TIME	.36	.6	.84	1.08	1.44	1.56	1.74	1.92	2.1	2.49	3.54	4.07
FILLING & MIXING	.11	.22	.33	.44	.66	.88	1.1	1.32	1.54	1.76	2.64	3.52
LOAD & UNLOAD	14.4	14.4	14.4	14.4	14.4	17.28	17.28	17.28	17.28	17.28	21.6	21.6
TOTAL TIME	14.87	15.22	15.57	15.92	16.5	19.72	20.12	20.52	20.93	21.53	27.78	29.12
PROCESS TIME	5.76	9.65	12.15	17.4	23.26	25.2	28.12	31.03	33.91	36.86	52.42	60.2
*ALLOWANCE 15%	3.1	3.73	4.16	5.00	5.97	6.74	7.24	7.74	8.23	8.76	12.03	13.4
STANDARD TIME IN SECONDS	23.73	28.6	31.88	38.32	45.73	51.66	55.48	59.29	63.07	67.15	92.23	102.72
STANDARD TIME IN HOURS	.0066	.008	.0089	.0107	.0127	.0144	.0154	.0165	.0176	.0187	.0257	.0286

*ALLOWANCES CONSIST OF 5% PERSONAL, 5% FATIGUE & 5% UNAVOIDABLE DELAY.

**FOR ANY PIECE LARGER THAN 8 SQ. FT. AND WEIGHING MORE THAN 50 LBS. ADD .006 HOURS TO ACCOUNT FOR A SECOND PERSON TO HELP LOAD AND UNLOAD THE PIECE.

7.3 MANNING, CREW SIZE AND JOB CLASSES

1. WORKER'S DUTIES:

(a) Blasters Prepare the surfaces of the ship and/or pieces to be assembled into the ship for coating by using a device which propels abrasive material at a high rate of speed onto the surface by either compressed air or other mechanical means to remove dirt, paint, mill scaler, etc. and provide an anchor pattern prior to surface roating by the Painters.

(b) Painters apply paint, varnish, lacquer, etc. to surfaces of the ship and/or parts to be assembled into the structure of the ship, for protective purposes primarily with spray gun or brush. Work is repetitive in character, requiring little or no selection of color schemes or shading and matching of colors, with the finishes being standard in character or prepared by others.

The manual methods were prorated according to the amount of actual blasting time that could be completed in a single 8 hour shift,

PRI based it's prorating on the average blasting time of 5 hours per 8 hour shift. The remaining 3 hours are a direct result of set-up time and material handling.

Locator No.	Frequency
691	7
693	7
071	7
700	8
728	0.33
729	48
730	3
731	45

DATA SYNTHESIS AND BACK-UP

The manual methods were prorated according to the amount of actual painting time that could be completed in a single 8 hour shift.

PBI based it's prorating on the average painting time of 4.6 hours per 8 hour shift. The remaining 3.4 hours are a direct result of set-up time and material handling.

Locator No.	691	Frequency 15
	692	15
	686	6
	732	33
	733	32
	734	16

DATA SYNTHESIS AND BACK-UP

8.1 SUMMARY

8.2 SYNTHESIS AND ANALYSIS

SECTION 9
ALLOWANCES

9.1 GENERAL

All standards will include a 15% PFD (personal, fatigue, and delay allowance). This percentage is considered to be a realistic industry percentage.

9.2 REGULAR AND SPECIAL ALLOWANCES

At the present time, the Industrial Engineering Department is continually monitoring the Blast and Paint Depts. for any changes in method and/or equipment that will change the allowance factor.

SECTION 10
STANDARDS APPLICATION

10.1 RESPONSIBILITY FOR MAINTENANCE OF STANDARDS

The Industrial Enginering Department will be responsible for the maintenance of all labor standards.

10.2 MAINTENANCE OF THE MANUAL AND TIME STANDARDS

The industrial Engineering Department will be responsible for the maintenance of the work management Manual, and all time standards within.

10.3 PROCEDURE FOR MAINTAINING THE MANUAL AND STANDARDS

The Industrial Engineering Department will make all revisions to the Work Management Manual and time standards and issue these revisions to the proper departments arid/or persons to be incorporated into their Work Management Manuals.

10.4 DISTRIBUTION

The Industrial Engineering Department will distribute the Work Magement. Manual to all department and/or persons deemed by the head of the Industrial Engineering Division to recieve copies of the Works

APPENDICES

A. GLOSSARY OF TERMS

A

ASTM Cups-standard laboratory test cups for measuring viscosity.

Abrasion resistance-resistance to mechanical wear,

Abrasive-the agent used for abrasive blast cleaning! for for example, sand, grit, etc.

Absorption-process of soaking up, or assimilation of one substance by another.

Accelerator- catalyst; a material which accelerates the hardening of certain coatinss.

Acetone-dimethyl ketone; solvent.

Acid number-a numerical index of free acid in an oil or resin.

Acoustic paint-paint which absorbs or deadens sound.

Acrylic resin-a clear resin polymerized from acrylic acid and methacrylic acid.

Activator-catalyst or curing agent.

Adaptors-cannectors for joining parts of different sizes.

Adduct curing agent-a curing agent combined with a portion of the resin.

Adhesion-bondins strength; the attraction of a cuating to the substrate.

Adsorption-process of attraction to a surface; attachment; the retention of foreign molecules on the surface of a substance.

Agglomeration-random attachment of single units to form groups; formation of masses of pigments; not dispersed.

Aging-remaininng undisturbed.

Asitator-stirrer; mixer.

Air adjusting valve-spray gun valve controlling input air.

Air bubble-dry bubble in paint film caused by entrapped air.

Air cap-perforated housing for atomizing air at head of spray gun.

Air drying-dries by oxidation or evaporative drying by Simple exposure to *air* without heat or catalyst.

Air entraining agents-natural wood resins, fats, inorganic *materials* sulfonated compounds, and oils for air entrapment in concrete UP to 10%.

Air entrapment-inclusion of air bubbles in paint film.

Air hose-hose of air Spply Quality, uaually red.

Airless spraying-spraying without atomizing air, using hydraulic pressure.

Airjet (sandblasting)-a type of *sndblasting gun* in wgich the abrasive is convesed to the gun by partial vacuum.

Air manifold (pig)-common air supply for several limes.

Air transformer-device for controlled reduction in air pressure.

Air valve-control valve in air line system.

Air volume-quantity of air in cubic feet (usually per minute) at normal (atmospheric) pressure.

Alcohol-a flammable solvent, miscible with water; alcohols commonly used in painting are ethyl alcohol (ethanol) and methyl alcohol (methanol, wood alcohol).

Aldehydes-chemical compounds containing R-CHO grouping.

Aliphatic hydrocarbons-'straight chain' solvents of low solvent power, derived from petroleum.

Alkali-caustic;inorganic compounds which release hydroxyl groups in aqueous media.

Alkyd resins-resins prepared by reacting alcohols and acids,

Alligatoring-surface imperfections of paint having the appearance of alligator hide.

Allyl resins-resins prepared from allyl alcohol.

Ambient temperatre-roam temperature or temperature of surroundings.

American gallOn-231 cubic inches.

Amides-compounds containing oxygen and amino (NH2) groupings.

Amine adduct-anine curing agent combined with a portion of the resin.

Amines-organic substituted ammonia; organic compounds having an NH2 group.

Amino resins-those Cantsining reactive NH2 groups.

Amgl phenol resins-particular group of organic film formers.

Anchor pattern-rofile, surface roghness.

Angle blasting-blast cleaning at angles less than 90 degrees.

Angle or degree (airless spray cap)-orifice angle) controls width of spray pattern angle.

Anhydride-compound not containing water.

Anhydrous-dry; free of water in any form.

Anion-negatively charged ion.

Annular orifice-circular opening.

Anode-the electrode at which corrosion (oxidation) occurs.

Applicator-one who applies; tool for applying.

Arcing-swinging spray gun away from perpendicular.

Argillaceous-clay containing.

Aromatic hydrocarbons-ring compounds; strong solvents.

Asphalt-residue from distilling Petroleum; also a natural complex hydrocarbon find in Trinidad, USA and elsewhere.

Asphalt cut back-asphalt Plus thinner; asphalt soluton; asphalt coatings formed & dissolving aspait.

.Asphalt emulsion-asphalt dispersion; not a solution; a water emulsion of asphalt.

Asphalt impregnated-containing absorbed asphalt.

Atomize-break stream into small Particles.

Aurand Scaler-Properietary cleaning tool using cutter wheel bundles.

B

Baking finish-finish requiring heat cure.

Banding-identifying with strips of tape.

Barrier-shielding or blocking device.

Base-substrats.

Binder-resin; film former; vehicle.

Bitumen-product of asphalt or coal tar origin.

Bituminous coating-coal tar or asphalt based coating,

Blast angle-angle of nozzle with reference to surface; also angle of particle Propelled from wheel with reference to surface.

Blast cleaning-cleaning with propelled abrasives.

Bleaching-removing color.

Bleeder gun-a spray gun with no air valve; trigger controls fluid. flow only.

Bleeding-surface flotation of color from under coats.

Blistering-bubbling in dry or Partially dry paint film.

Block coat-(barrier coat or transition Primer)-tie coat (adhesive) between non-compatible paints.

Blooming-whitening; moisture blush; blushing.

Blow-back (spray term)-rebound.

Blushing-whitening and loss of gloss due to moisture; blooming.

Body-viscosity; middle or under (coat).

Boilers (solvent)-solvents of particular evaporation rate.

Bonderizing-a five-step proprietary custom process for phosphatizing.

Bonding-adhesion.

Boomerang (Mikrotest Gauge)-a single magnet proprietary direct reading, dry film thickness gauge.

Bounce-back--spray rebound.

Boxing-mixing by pouring from one container to another.

Bridging-forming a skin over a depression.

Bright blast-white blast.

Brittleness-degree of resistance to cracking or breaking by bending.

Bronze tools-non-sparking tools.

Bronzing-formation of metallic sheen on a paint film.

Brushability-ease of brushing.

Brush-off blast--see NACE No. 4 in this alphabetical listing.

Bubbling-a term used to describe the appearance of bubbles on the surface while a coating is being applied.

Bulking value-volume per unit weight, usually expressed as gallons per pound.

C

Caking-hard settling of pigment from paint.

Calcareous-lime containing.

Calcimine-pigment used in white wash.

Casein paint-water thinned paint with vehicle derived from milk.

Catalyst-accelerator; curing agent; promoter.

Cat-eye--hole or holiday shaped like a cat's eye; cratering.

Cathode-the electrode at which corrosion (oxidation) usually does not occur.

Cathodic protection-corrosion prevention by sacrificial anodes or impressed current.

Cation-positively charged ion.

Cavitation-undercutting; crevice forming; may be caused by fluids at high velocities and by flashing from liquid to gaseous state.

Cellulose resins-those prepared from cellulose derivatives.

Cement finishes-coatings containing Portland cement.

Centipoise-a metric unit of viscosity.

Centrifuge-device for separating solids from liquids by centrifugal action.

Chalking-powdering of surface.

Champagne finish (effervesence)-rapid escape of solvent visible by bubbling.

Check-shallow crack of short length.

Checking-formation of checks.

Chipping-(1) cleaning steel using special hammers. (2) type of paint failure.

Chlorinated rubber-a particular film former used as a binder, made by chlorinating natural rubber.

Cleaner-(1) detergent, alkali, acid or other cleaning material; usually water or steam borne. (2) solvent for cleaning paint equipment.

Clean surface-one free of contamination.

Coal tar-black residue reminigs after cual is distilled.

Coal tar epoxy paint-paint in which binder or vehicle is combination of coal tar with epoxy resin.

Coal tar urethane Paint-paint in which binder or vehicle is combination of coal tar with Polyurethane resin.

Coatings-surface coverings; Paints; barriers.

Coat of Paint-one layer of dry paint, resulting from a single wet application.

Cobwebbing-Premature drying causing a spider web effect.

Cohesion-Property of holding self together.

Cold-checking--checking caused be low temperature.

Cold-crackinq-cracking occuring at low temperature.

Color dynamics-scientific use of action colors.

Color-fast--non-fading.

Color retention-ability to retain original color,

Commercial bast-see NACE no, 3 in this alphabetical listing.

Compatibility-ability to mix with or adhere Properly to other components

Composition-analysis; make-up.

Continuity-degree of being intact or pore free,

Contrast ratio- the co-efficient of reflection of the black surface area divided by the co-efficient of reflection of the white area,

Converter-that which causes change to different state; catalyst; curing agent; promoter.

Copolymers-large molecules resulting by simultaneous polymerization of different monomers,

Copper sulfate test (for mill scale)-copper color indicates absence of mill scale when steel swabbed with 5 to 10 per cent solution.

Corrosion-decay; oxidation; deterioration due to interaction with environment; eaten away by degrees.

Corrosion fatigue-loss of strength caused by corrosion.

Coumarone-indene resins-particular type of organic binder or resin; coal tar resins.

Coverage-milage, usually in square feet per gallon for a given dry film thickness.

Cracking-splitting; disintegration of paint by breaks through film.

Cratering-formation of holes or deep depressions in paint film.

Crawling-shrinking of paint to form uneven surface.

Crazing-development of non-uniform surface appearance of myriad tiny scales of cracks.

Creepage-see crawling.

Cross-linking--a particular method by which chemicals unite to form films.

Cross-spray--spraying first in one direction and second at right angles.

Crystalline structure- a structure in which components have a regular pattern of planes.

Curing-setting up; hardening.

Curing agent-hardener; promoter.

Curtaining-sagging.

Curtains-sags having a draped effect.

Cycling (of pump)-interval between strokes.

D

Damp-wet; not dry.

Deadman valve-shut-off valve at blast nozzle, operated by remote control.

Decorative painting-architectural painting; aesthetical painting.

Degreaser-chemical solution (compound) for grease removal.

Delamination-separation of layers.

Density-weight per unit volume.

Detergent-cleaning agent.

Deterioration-decay.

Dew point-temperature at which moisture condenses.

Diluent-a liquid which lowers viscosity and increases the bulk but is not necessarily a solvent for the solid ingredients; a thinner.

Discoloration-color change.

Dispersion-suspension of one component in another.

Distensibility-ability to be stretched.

Distillation-purification or separation by volatilizing and condensing.

Doctor blade-knife applicator.

Dolomite-carbonate of calcium and magnesium.

Double regulation-regulation of both pot and gun air pressure.

Drier-chemical which promotes oxidation or drying of paint.

Drift (overspray)-spray loss.

Drop (scaffold)-one vertical descent of the scaffold.

Drop cloth-protective cover.

Dry spray-overspray or bounce back; sand finish due to spray particle being partially dried before reaching the surface.

Drying oil-an oil which hardens in air.

Drying time-time interval between application and final cure.

Dry to handle-time interval between application and ability to pick up without damage.

Dry to recoat-time interval between application and ability to receive next coat satisfactorily.

Dry to touch-time interval between application and tack-free time.

Dulling-loss of gloss sheen.

E

Edging-striping.

Efflorescence-deposit of soluble white salts on surface of brick and other masonry.

Eggshell-semi-gloss; dull.

Elasticity-degree of recovery from stretching.

Elcometer-a two-prong proprietary magnet direct reading dry film thickness gauge.

Electrolysis-decomposition by means of an electric current.

Electrolyte-a substance which disassociates into ions when in solution or a fused state and which will then conduct an electric current.

Electrostatic spray-spraying in which electric charge attracts paint to surface.

Elongation-stretch.

Emulsion paint-water base paint with an emulsified resin vehicle.

Enamel-pigmented varnish; any hard, glossy coating.

Endothermic-a change or process which takes place with absorption of heat.

Epoxy resins-film formers usually made from bisphenol and epichlorohydrin.

Epoxy amine-amine cured epoxy resin.

Epoxy adduct-epoxy resin having all of the required amine incorporated by requiring additional epoxy resin for curing.

Epoxy ester-epoxy modified oil; single package epoxy.

Erosion-wearing away of paint films; heavy chalking tends to accelerate erosion.

Ester-reaction product of alcohol and acid; an organic salt.

Estimate-compute; calculated cost of a job.

Etch-surface attack by chemical means.

Evaporation rate-rate of solvent release.

Evaporation rate, final-time interval for complete evaporation of all solvents.

Evaporation rate, initial-time interval during which low boiling solvent evaporates completely.

Exothermi-a change or process in which heat is given off.

Explosion-cratering from release of solvent after surface is dry, also see blistering.

Explosive Limits-a range of the ratio of solvent vapor to air in which the mixture will explode if ignited. Below the lower or above the higher explosive limit the mixture is too lean or too rich to explode. The critical ratio runs from about one to seven percent of solvent vapor by volume at atmospheric pressure.

Extender-filler; cheapener.

Extension gun-pole gun.

External mix-spray equipment in which fluid and air join outside of spray.

F

FDA-see Food & Drug Administration.

Fadeometer-device for measuring color retention or fade resistance.

Fading-reduction in brightness of color.

Fallout (spray)-overspray.

False body-thixotropic.

Fanning (spray gun technique)-arcing.

Fan pattern-geometry of spray pattern.

Fast drying-dry for recoat in less than 24 hours, quick hardening paint.

Fat paint-too much oil.

Fatty acid-a component of certain drying oils; vegetable oil derivitive.

Feather edge-tapered edge.

Feathering-(1) flickering a gun at the end of each stroke; (2) tapering edge.

Federal specifications-government specifications for formulations, raw material components, or performance.

Ferrous-iron containing.

Field painting-painting at the job site.

Filler-extender, bulking agent; inert pigment.

Film build-dry thickness characteristics per coat.

Film former-a substance which forms a skin or membrane when dried from a liquid state.

Film integrity-degree of continuity of film.

Film thickness gauge-device for measuring film thickness above substrate; dry or wet film thickness gauges are available.

Filter-strainer; purifier.

Fineness of grind-measure of particle size or roughness of liquid paint; degree of dispersion of pigment in binder.

Fingers (airless)-broken spray pattern; finger like.

Fire retardant paint-a paint which will delay flaming or overheating of substrate.

Fish eye-see cratering.

Flaking-disintegration in small pieces or flakes.

Flammability-measure of ease of catching fire; ability to burn.

Flame cleaning-method of surface preparation of steel using flame.

Flash point-the lowest temperature at which a given flammable material will flash if a flame or spark is present.

Flat finish-dull finish; no gloss.

Flatting agent-paint ingredient causing low gloss;

Flexibility-ability to be bent without damage.

Floating-separation of pigment colors on surface.

Flocculation-see agglomeration.

Flocking-a coating process producing velvet-like surfaces.

Flooding-see floating.

Flow-a measure of self spreading ability; spread.

Fluid adjusting screw-a screw on a spray gun which controls the amount of fluid entering the gun.

Fluid flow-a measure of flow through a gun with atomizing air shut off.

Fluid hose-specially designed hose for paint materials; usually black.

Fluid nozzle-fluid tip or orifice; in a broader sense it connotes needle and tip combination.

Fluid tip-orifice in gun into which needle is seated.

Foaming-frothing.

Fogging-misting.

Food & Drug Administration (FDA)-agency involved with linings for food or pharmaceutical service.

Forced drying-acceleration of drying by increasing the temperature above ambient temperature accompanied by force air circulation.

Ford cup-a proprietary viscosity measuring device.

Frothing-foaming.

Fungicide-a substance poisonous to fungi; retards or prevents fungi growth.

Fungus-any of a group of plants, such as molds, mildew, mushrooms,

smuts, etc.

Furane resins-dark chemical resistant resins made from furfuryl alcohol, furfural and phenol.

Furfural-a particular type of aldehyde used to make furane resins.

G

Galvanic corrosion-corrosion of dissimilar metals in electrical contact.

Galvanized steel-zinc plated steel applied in a molten bath of zinc.

Gas checking-fine checking; wrinkling, frosting under certain drying conditions; said to be caused by rapid oxygen absorption or by impurities in the air.

Gel-a jelly-like substance.

Gelling (gelation)-conversion of a liquid to a gel state.

Generic-belonging to a particular family.

Gilsonite-a special bitumen; an asphalt found in Utah; one of the purest of natural bitumens.

Glazing (paint term)-application of transparent or translucent pigment on a painted surface to produce certain blended effects.

Gloss-sheen; ability to reflect; brightness; lustre.

Gloss meter- for measuring sheen or lustre.

Gloss retention-ability to retain original sheen.

Grain-surface appearance, usually of wood.

Gray blast-commercial blast.

Grind gauge (Hegeman)-proprietary instrument for measuring smoothness of liquid paint.

Grit-an abrasive obtained from slag and various other materials.

Ground wire (airless)-a wire attached to dissipate electrostatic charge.

Grooving (roofing term)-formation of shallow channels.

Guide coat-a coat similar to the finish or color coat but of a different color to assure good coverage.

Gun distance-space between tip of gun and work.

H

Halide-a compound containing fluorine, bromine, chlorine, or iodine.

Halogen-bromide, chlorine, fluorine or iodine.

Hardener-curing agent; promoter; catalyst.

Hardness-the degree a material will withstand pressure without deformation or scratching.

Hazing-clouding.

Hesiometer-proprietary device for measuring cohesion and adhesion.

Heavy centered pattern-spray pattern having most paint in center, less at edges.

Hiding power-ability to obscure substrate.

High boiling solvent-a solvent with an initial boiling point above 302F (150C).

High build-producing thick dry films per coat.

High flash naptha-an aliphatic solvent having a high flash point, (113F, 45C).

Hold out-ability (or property) to prevent soaking into substrate.

Holiday-pinhole; skip, discontinuity; voids.

Holiday detector-device for detection of pinholes or holidays.

Honeycombing-lack of vertical film integrity; formation of cell structure; voids.

Hose cleaner-mechanical device promoting a beneficial swirling action to cleaning solvent.

Hose restriction-impediment; reduced diameter.

Hot spray-spraying material heated to reduce viscosity.

Hot surface-above 120 degrees F, (48.9C).

Humidity-measure of moisture content; relative humidity is the ratio of the quantity of water vapor in the air to the given temperature.

Hummocking (roofing term)-formation of raised islands.

Hydraulic spraying (see airlines)-spraying by hydraulic pressure.

Hydrophilic-having an affinity for water; capable of uniting with or dissolving in water.

Hydrophobic-having an antagonism for water; not capable of uniting or mixing with water.

Hydroxyl-chemical radical; OH; basic nature.

Hygroscopic-having a tendency to absorb water.

I

Impact resistance-a measure of resistance to a blow; ability to resist deformation from impact.

Incompatability-inability to mix with or adhere to another material.

Indicator-(pH) paper-a vegetable dyed paper indicating relative acidity or basicity.

Inert-not reactive.

Inert pigment-a non-reactive pigment; filler.

Inflammability-measure of ease of catching fire; ability to burn; use of the word flammability due to the possible misinterpretation of the prefix 'in' as a negative.

Inhibitive pigment-one which retards corrosion process.

Inhibitor-an agent added to retard corrosion.

Inorganic-containing no carbon.

Inorganic coatings-those employing inorganic binders or vehicles.

Insulation- thermal, electrical, or sound barrier material; a poor conductor.

Intercoat contamination-presence of foreign matter between successive coats.

Intermediate coat-middle coat; guide coat.

Internal mix-a spray gun in which the fluid and air are combined before leaving the gun.

Intumesce-to form a voluminous char on ignition; foaming or swelling when exposed to flame.

Ion-an electrically charged atom or group of atoms.

Iron phosphate coating-conversion coating; chemical deposit.

Isocyanate resins-resins characterized by CNO groupings; polyurethane resins.

J

Japan-dark colored glossy varnish.

Japan drier-weak mixture of driers.

Jeep test-continuity test using low voltage circuit.

K

KB value-measure of solvent power.

KTA panel- a proprietary paint test panel with unique configuration and markings.

KTA rating system-10 for no failure, 0 for complete failure; ; proprietary method of measuring paint disintegration over KTA panels.

Kauri reduction-test for solvent power of petroleum solvents.

Ketones-organic solvents containing CO groupings; commonly used ketones are acetone-dimethyl ketone.

Kreb units-units of viscosity.

L

Lacquers-coating which dry by evapation of solvent.

Laitance-milky white deposit on new concrete; efflorescence.

Laminar scale-rust formation in heavy layers.

Lap-see overlap.

Latex-rubber like; a common binder for emulsion (water) paints; there are natural and synthetic latexes.

Leaching-the process of extraction of a soluble component from a mixture with an insoluble component by percolation of the mixture with a solvent, usually water.

Leafing-orientation of pigment flakes in horizontal planes.

Levelling-flowing out to films of uniform thickness; loss of brush marks in paint.

Lifting-softening and raising of an undercoat by application of a top coat.

Linings-internal barriers; linings may be coated or sheet type.

Livering-formation of curds or gelling.

Long oil-a resin having a large quantity of oil cooked per 100 pounds of resin.

Loose flake (mill scale)-thin, easily-removed scale.

Low boiling solvent-a solvent with an initial boiling point below 302F (150C).

Low pressure spraying-conventional air spraying.

M

MAC (maximum allowable concentration)-maximum allowable concentration in parts of solvent vapor to one million parts of air in which a worker can work not more than eight consecutive hours without an air fed mask; the lower the MAC number, the more toxic the solvent.

MEK-see methyl ethyl ketone.

MIBK-see methyl isobutyl ketone.

MVT-see moisture vapor transmission..

Maintenance painting-(1) repair painting; any painting after the initial paint job; in a broader sense it includes painting of items installed on maintenance; (2) all painting except that done solely for aesthetics.

Maleic resins-a class of resins obtained from polymerization of maleic acid or maleic anhydride with alsohols; rosins; etc.

Mandrel test- a physical bending test for adhesion and flexibility.

Masking-covering areas not to be painted.

Mass tone-base covering.

Mastic-a heavy bodied coating of high build.

Melamine resins-synthetic resins which are condensate products of formaldehyde and melamine; they require baking.

Metallizing-mechanical deposition of one metal on another.

Methyl ethyl ketone (MEK)-a strong solvent.

Methyl isobutyl ketone(MIBK)-a strong solvent.

Mikrotest Gauge-a proprietary single magnet dry film thickness gauge.

Mil-one one-thousandth of an inch; .001".

Milage-coverage rate; square feet per gallon at a given thickness.

Mild steel-structural steel SAE 1020.

Mildew-fungus.

Mildewcide-substance poisonous to mildew; prevents or retards growth of mildew.

Mill scale-oxide layer formed on steel by hot rollings.

Mill scale binder-gray oxide layer between mill scale and steel.

Mill white-one coat high hiding power interior paint.

Mineral spirits-aliphatic solvent with solvency similar to turpentine.

Miscible-capable of mixing or blending uniformly.

Misses-holidays; skips; voids.

Mist-coat--thin tack coat; thin adhesive coat.

Moisture and oil separator-trap on air compressor or in air lines.

Moisture vapor transmission (MVT)-moisture vapor transmission rate through a membrane; also see perm.

Monomer-composed of single molecules; a basic chemical used to make polymers.

Mopping-swabbing, as with roofing asphalt.

Mottling-speckling; an uneven color on paint.

Mud-cracking--irregular cracking, as in a dried mud puddle.

Multicolor finishes-speckled finishes; paints containing flecks of colors different from the base color.

N

NACE No. 1 white metal blast cleaned surface finish-this finish is defined as a surface with a gray-white, uniform metallic color, slightly roughened to form a suitable anchor pattern for coatings; this surface shall be free of all oil, grease, dirt, visible mill scale, rust,

corrosion products, oxides, paint, or any other foreign matter; the surface shall have a color characteristic of the abrasive media used; photographic or other visual standards of surface preparation may be used to further define the surface.

NACE No. 2 near-white blast cleaned surface finish-this finish is defined as one from which all oil, grease, dirt, mill scale, rust, corrosion products, oxides, paint or other foreign matter have been removed from the surface except for very light shadows, very slight streaks or slight discolorations; at least 95% of the surface shall have the appearance of a surface blast cleaned to a white metal surface finish and the remainder shall be limited to the light discoloration mentioned above; photographic or other visual standards of surface preparation may be used to modify or further define the surface.

NACE No. 3 commercial blast cleaned surface finish-this finish is defined as one from which all oil, grease, dirt, rust scale, and foreign matter have been completely removed from the surface and all rust, mill scale, and old paint have been completely removed except for slight shadows, streaks, or discolorations; if the surface is pitted, slight residues of rust or paint may be found in the bottom of the pits; at least two-thirds of the surface area shall be free of all visible residues and the remainder shall be limited to light discoloration, slight staining or light residues mentioned above; photographic or other visual standards may be used to further define the surface.

NACE No. 4 brush-off blast cleaned surface finish-this finish is defined as one which oil, grease, dirt, rust scale, loose mill scale, loose rust, and loose paint or coatings are removed completely, but light mill scale and tightly adhered rust, paint and coatings are permitted to remain provided they have been exposed to the abrasive blast pattern sufficiently to expose numerous flecks of the underlying metal fairly uniformly distributed over the entire surface; photographic or other visual standards of surface preparation may be used to further define the surface.

Naptha-an aliphatic solvent cut; hydrocarbons of the C_nH_{2n+2} series.

Near-white blast cleaning-see NACE No.2 in this alphabetical listing.

Needle (spray gun)-fluid metering pin.

Neoprene-a rubber-like film former; a type of elastomers based on polymers of 2-chloro-butadiene-1,3.

Nondrying oil-one which will not harden in air.

Nonferrous-containing no iron.

Nonflammable-incombustible.

Nontoxic-not poisonous.

Nonvolatile-solid; non-evaporating; the portion of a paint left after the solvent evaporates.

Nozzle-orifice; sandblast nozzle; spray gun nozzle.

Nylon resins-a particular group of film formers having recurring amide groups--CONH, as an integral part of the main polymer chain; polyamide resins.

O

Oil absorption-a measure of the ability of pigments to absorb oil.

Oil color-coloring (pigment or dye) dispersed in oil.

Oil length-gallons of oil reacted with 100 pounds of resin.

Oleoresinous-film former containing oil and resin.

Opacity-hiding power.

Orange peel-dimpled appearance of dried film; resembling orange peel.

Organic-containing carbon.

Organosol-film former containing resin plasticizer and solvent; colloidal dispersion of a resin in plasticizer containing more than 5% volatile content.

Orifice-opening; hole.

Osmosis-transfer of liquid through a paint film or other membrane.

Osmotic blistering-formation of blisters containing liquid.

Overatomized-dispersed too finely by use of excessive atomizing air pressure.

Overcoat-second coat; top coat.

Overlap-portion (width) of fresh paint covered by next layer.

Overspray-sprayed paint which did not hit target; waste.

Oxidation-combination with oxygen; drying; burning; rusting.

Oxide-chemical compound of an element, usually a metal, with oxygen.

P

PVA-see polyvinyl acetate.

PVC-see pigment volume concentration or polyvinyl chloride.

Paint heater-device for lowering viscosity of paint by heating.

Paint program-comprehensive painting plan.

Paint project-single paint job.

Paint system-the complete number and type of coats comprising a paint job. In a broader sense, surface preparation, pretreatments, dry film thickness, and manner of application are included in the definition of a paint system.

Particle size distribution-percentages of particles of different screen sizes.

Pass (spray)-motion of the spray gun in one direction only.

Passivation-act of making inert or unreactive.

Pattern length-height of spray pattern.

Pattern width-width of spray pattern at vertical center.

Peeling-failure in which paint curls from substrate.

Perm-a unit for expressing MVT rate; a perm-inch = 1 grain of water

per hour per square foot per one inch thickness (except where otherwise noted) per one inch difference in mercury vapor pressure on each side of membrane.

Permeability-quality or state of being permeable.

Phenolic resins-particular group of film formers; phenol-formaldehyde type.

Phosphatize-form a thin inert phosphate coating on surface usually by treatment with H3 P04 (phosphoric acid).

Phthalic resins-a particular group of film formers; alkyds.

pH value-measure of acidity or alkalinity; pH 7 is neutral; the pH value of acids ranges from 1 to 7, and of alkalies (bases) from 7 to and including 14.

Pickling-a dipping process for cleaning steel and other metals; the pickling agent is usually an acid.

Pig-see air manifold.

Pigment grind-dispersion of pigment in a liquid vehicle.

Pigments-solid coloring agents.

Pigment volume concentration (pvc)-percent by volume occupied by pigment in dried film.

Pig tail-finger-like spray pattern.

Pitting-formation of small, usually shallow depressions or cavaties.

Pin-holing--formation of small holes through the entire thickness of coating; see cratering.

Plasticizer-a paint ingredient which imparts flexibility.

Plastisol-film former containing resin and plasticizer with no solvents.

Pock marks-pits; craters.

Pole-gun--spray gun equipped with an extension tube.

Polymerization-formation of large molecules from small ones.

Polymer-the product of polymerization; large molecules.

Polyvinyl acetate (PVA)-a synthetic resin used extensively in emulsion (water) paints; produced by the polymerization of vinyl acetate.

Polyvinyl chloride (PVC)-a synthetic resin used in solvent type coatings and fluid-bed coatings; produced by the polymerization of vinyl chloride; PVC is also used in emulsion (water) paints.

Polyvinyl chloride acetate-a combination of PVA and PVC used in coatings.

Porosity-hole; degree of integrity or continuity.

Pot-life--time interval after mixing during which liquid material is usable with no difficulty.

Precipitation-settling out of solid material.

Pressure balance-in spray painting; relationship of pot pressure to atomizing air pressure.

Pressure drop-loss in pressure due usually to length or size of line or hose.

Pressure feed-fluid flow caused by application of air or hydraulic pressure on paint.

Pressure feed paint tank (pressure pot)-fluid container in which fluid flow is caused by air pressure.

Preventive maintenance painting-spot repair painting; touch up or full coats of paint before rusting starts.

Prime coat-first coat.

Primer-material used for prime coat.

Production rate (sq ft/day)-measurement of surface area cleaned or coated in one working day by one man.

Profile-surface contour as viewed from edge.

Profile depth-average distance between tops of peaks and bottom

of valleys on the surface.

Proprietary-available on open market under brand name.

Protective life-interval of time during which a paint system protects substrate from deterioration.

Pulsation-surging.

Pump bypass-recirculation line which returns fluid to container.

Pump ratio-multiplier of input pressure which indicates output pressure; ratio of air piston area to fluid piston area.

Q

Quick release fittings-snap-lock fittings.

R

Reaching (spray gun)- extending spray stroke too far.

Rebound-paint spray deposit bounced back.

Recoat time-time interval required between application of successive coats.

Red label goods-flammable or explosive materials with flash points below 80F (26.7 C).

Reducer-a material which lowers viscosity but is not necessarily a solvent for the particular film former; thinner.

Reflectance-degree of light reflection.

Repainting-repetition of a complete painting operation including surface preparation.

Resin-a material, natural or synthetic, contained in varnishes, lacquers, and paints; the film former.

Respirator-safety breathing mask.

Reticulation-a surface defect of net-like appearance.

Rise-height.

Roller coating-the act of, or the material, applied with a roller.

Round pattern-circular spray pattern.

Runs-curtains; sags.

Rust-corroded iron; red iron-oxide; also other metal oxides formed by corrosion.

Rust bloom-discoloration indicating the beginning of rusting.

S

SSPC-Steel Structures Painting Council.

Safety valve-pressure release valve preset to safe operating limit.

Sags-runs.

Salt spray-a salt fog test environment.

Sandblast-blast cleaning using sand as an abrasive; for different in this alphabetical listing.

Sandy finish-a surface condition having the appearance of sandpaper overspray.

Saturant-that substance, usually a liquid, which saturates something else.

Saturated-holding the maximum amount of saturant it is capable of holding.

Scale-laminar rust.

Scaler-a hand cleaning chisel.

Scaling-process of delamination.

Sealer-a low viscosity (thin) liquid applied before priming wood or masonry.

Seeding-formation of small agglomerates.

Separation-division into components or layers by natural causes.

Settling-caking; sediment.

Shade-degree of gray tone in a color.

Shelf life-maximum interval in which a material may be stored in usable condition.

Shellac-a resin secreted by insects; a lacquer; resin in alcohol.

Shielding-protecting; protective cover against mechanical damage.

Shop coat (prime)-first coat applied in fabricating shop.

Short oil-a varnish prepared by cooking a relatively small quantity of oil with 100 pounds of resin, quick drying; brittle; less than 25 gallons of oil per 100 pounds of resin.

Shot blasting-blast cleaning using steel shot as the abrasive.

Shrinkage-decrease in volume on drying.

Silicate paints-those employing silicates as binders.

Silicone resins-a particular group of film formers; used in water proof and high temperature paints; organosiloxane polymers; semi-organic polymers containing silicon.

Silking-a surface defect characterized by parallel hairlike striations in coated films.

Skinning-formation of a solid membrane on top of a liquid.

Skips-holidays; misses; uncoated area; voids.

Slow drying-requiring 24 hours or longer before recoating.

Slug-surge of material; blob.

Solid-non-volatile portion of paint.

Solids volume-percentage of total volume occupied by non-volatiles.

Solubility-degree to which a substance may be dissolved.

Solution-a liquid in which a substance may be dissolved.

Solvency-measure of ability to act as a solvent.

Solvent-a liquid in which another substance may be dissolved.

Solvent balance-ratio of amounts of different solvents in a mixture of solvents.

Solvent pop-blistering caused by entrapped solvent.

Solvent power-see solvency.

Solvent release-ability to permit solvents to evaporate.

Solvent wash-cleaning with solvent.

Spalling-the cracking, breaking or splintering of materials, usually due to heat.

Spark testing-detection of holidays (flaws) using electric spark.

Spark-proof tools--bronze beryllium tools.

Specific gravity-ratio of weight of a given volume to weight of an (equal volume of water at the same temperature.

Specular gloss-mirror-like reflectance.

Spewing- irregular or intermittent surging with subsequent liquid spillage.

Spider (power staging)- a proprietary mechanical boat swain's chair or platform.

Spit-sputter.

Spot repair-preventive maintenance; repainting of small areas.

Spray cap-front enclosure of spray gun equipped with atomizing air holes.

Spray head- combination of needle, tip, and air cap.

Spray pattern-configuration of spray, gun held steady.

Spreading rate-coverage, milage, usually at specified dry thickness.

Sputtering flow-spitting; surging.

Squeegee-rigid bar applicator.

Static wire-ground wire.

Steam clean-a cleaning process using live steam.

Strain-to filter.

Streaks-a surface defect characterized by essentially parallel lines of different colors or shades.

Striping-edge painting prior to priming.

Stroke (spray)-a single pass in one direction.

Styrene-butadiene-resin; copolymer of styrene and butadiene.

Substrate-surface to be painted.

Suction feed (spray gun)-one in which the fluid is syphoned to the spray head.

Surface tension-cohesive force on liquid surface.

Surfacer-a paint used to smooth the surface before finish coats are applied.

Surge-see spewing; non-continuous flow.

Surge chamber (airless spray)-a device to eliminate uneven fluid flow.

Sweating-condensing moisture on a surface.

Swelling-increasing in volume.

Swivel fitting-one capable of being moved in any direction.

Swivel head-spray head adjustable to deliver spray in many directions

Synthetic-manufactured; not occuring naturally.

Tail line-short piece of blast hose smaller than the main hose to permit better maneuverability.

Tails (airless spray)-finger-like spray pattern.

Tank whites-good hiding; self cleaning; white paints; usually alkyds.

Tapered pattern-elliptical shaped spray pattern; a spray pattern with converging lines.

Tape test- a particular type of adhesion test.

Tenacity- ability to stick together; cohesiveness; adhesiveness.

Tensile strength-resistance to elongation; the greatest longitudinal stress a substance can bear without rupture or remaining permanently elongated.

Terpene resins-a particular group of film formers, prepared from isomeric hydocarbons such as turpentine or similar oleo-resins.

Test pattern-spray pattern used in adjusting spray gun.

Thermoplastic-mobile or softens under heat.

T

Thermosetting-becomes rigid under heat and cannot be remelted.

Thinners-volatile organic liquids for reducing viscosity; solvents.

Thixotropic-false-bodied; a gel which liquifies with agitation but gels again on standing.

Tinsley Gauge-a proprietary pencil-like, single magnet, dry film thickness gauge.

Tint-degree of white in a color; a color produced by the mixture of white paint or pigment with a non-white colored paint or pigment.

Toner-a color modifier.

Tooth-profile; mechanical anchorage; surface roughness.

Top coating-finish coat.

Touch-up painting-spot repair painting usually conducted a few months after initial painting.

Toxic-poisonous.

Toxicity-degree of poisonousness or harmfulness.

Transition primer (block or barrier coat)-coating compatible with primer and also with a finish coat which is not compatible with primer.

Trigger-operating lever of spray gun.

Triggering-intermittent squeezing and releasing of trigger.

Tubercule-nodule; pimple.

Two-component gun--one having two separate fluid sources leading to spray head.

U

Underatomized-not dispersed or broken-up fine enough.

Unit cost-cost per given area.

Urea resins-a particular group of film formers; (amino resins).

Urea formaldehyde-a particular group of film formers; usually requires baking; produced by reacting urea with formaldehyde.

Urea melamine-see melamine.

Urethane resins-a particular group of film formers; isocynate resins.

V

VM&P naptha-varnish and paint manufacturers naptha; an aliphatic solvent.

Vapor degreasing-a cleaning process utilizing condensing solvent as the cleaning agent.

Vaporization-conversion from liquid or solid to a gaseous state; phase change.

Varnish-liquid composition of oil, resin, thinners and driers, which is converted to a transparent or translucent solid film after application as a thin layer or coat.

Vehicle-liquid carrier; binder; anything dissolved in the liquid portion of a paint is a part of the vehicle.

Veiling-curtaining; sagging.

Venturi-a tube having a restriction to promote velocity increase.

Vertical pattern-a spray pattern whose longest dimension is vertical.

Vinyl acetate-a particular resin monomer; obtained by reaction of acetylene and acetic acid; see PVA, polyvinyl acetate.

Vinyl chloride-a particular resin monomer; obtained by reaction of acetylene and hydrochloric acid, cracking of ethylene dichloride, or reaction of ethylene dichloride and soda; see PVC, polyvinyl chloride.

Vinyl coatings-one in which the major portion of binder is of the vinyl resin family.

Vinyl copolymer-resins produced by copolymerizing vinyl acetate and vinyl chloride.

Vinyl resins-a particular group of film formers; see PVA and PVC.

Viscosity-a measure of fluidity.

Viscosity cup-a device for measuring viscosity.

Voids-holidays, holes, skips.

Volatiles-fluids which evaporate rapidly.

Volatile content-percentage of materials which evaporate.

W

Washing-erosion of a paint film after rapid chalking.

Wash primer-a thin inhibiting paint usually chromate pigmented with a polyvinyl butyrate binder.

Water blasting-blast cleaning using high velocity water.

Water spotting-a surface defect caused by water droplets.

Weatherometer-a testing device intended to simulate atmospheric weathering.

Weld joints-beads of weld joining two members.

Weld slag-amorphous deposits formed during welding.

Weld spatter-beads of metal left adjoining a weld.

Weld splatter-see weld spatter.

Wet edge-fluid boundary.

Wet film gauge-device for measuring wet film thickness.

Wet film thickness-thickness of liquid film immediately after application.

Wet spray-spraying so that surface is covered with paint that has not started to dry.

Wetting strength-the maximum distance or penetration the vehicle is capable of delivering the paint or coating assemble in a vertical or horizontal direction on a specific substrate.

Wetting time-the time required for a vehicle to reach the end point of distance and penetration on a metal.

Whipping (spray gun)-arcing, waving.

Whip blast-see NACE No. 4 in this alphabetical listing.

Whip line-see tail line.

White blast-see NACE No. 1 in this alphabetical listing.

Whiting-Paris white; sliders white; fine ground, naturally occuring calcium carbonate, CaCO3, about 98% pure. Used as an inexpensive filler and extender.

Wicking-absorption of liquid by capillary action.

Wire brush-a hand cleaning tool comprised of bundles of wires; also the act of cleaning a surface with a wire brush, including power brushes.

Wrinkling-a surface defect resembling the skin of a prune.

Wrist action (spray gun)-swiveling of wrist without arcing forearm.

Y

Yellowing-development of yellow color or cast, in whites, on aging.

Z

Zinc phosphate coating-a thin, inorganic deposit formed on zinc treated with phosphoric acid.

Zinc silicate-inorganic zinc coating.

Zinc yellow-zinc chromate.

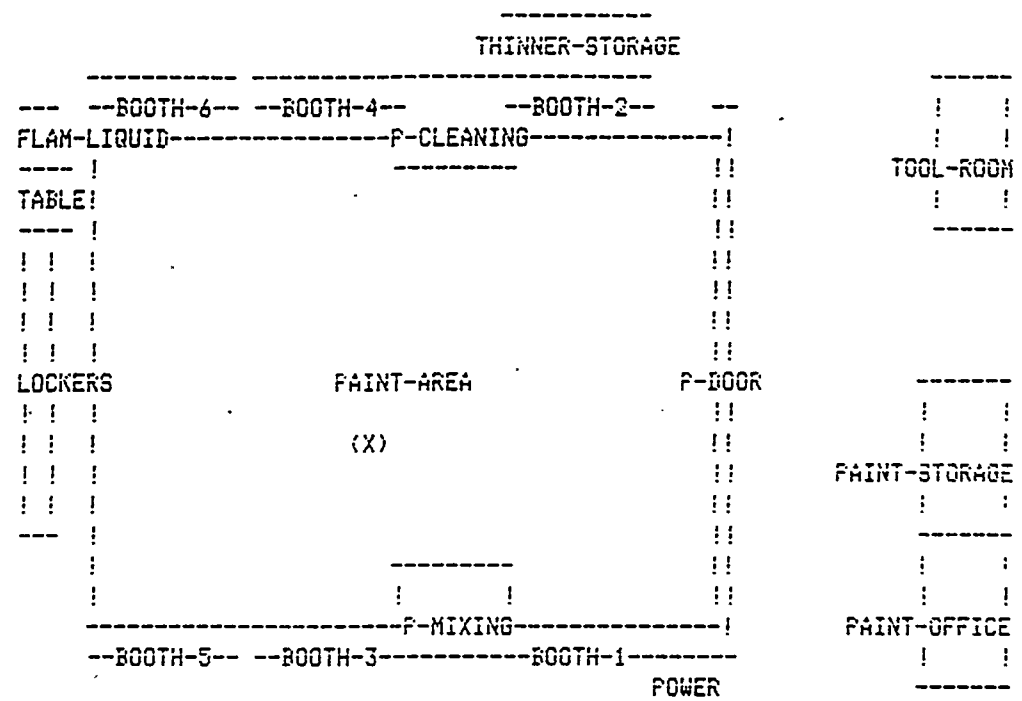
WORK MANAGEMENT MANUAL

IN-SHOP BLASTING MANUAL

INDEX

SECTION 4
LAYOUTS AND MATERIAL FLOW

4.1 WORK AREAS



Name	Location	Body/Fras/FT
WORKPLACES:		
PAINT-OFFICE	65,0	6,5
PAINT-STORAGE	65,5	6,5
TOOL-ROOM	66,15	5,5
THINNER-STORAGE	35,21	10,1
POWER	46,0	4,1
BOOTH-1	35,1	10,1
BOOTH-3	17,1	10,1
BOOTH-5	5,1	10,1
BOOTH-2	35,19	10,1
BOOTH-4	17,19	10,1
BOOTH-6	5,19	10,1
P-CLEANING	27,17	8,3
P-MIXING	27,1	8,3
LOCKERS	0,5	2,10
FLAM-LIQUID	0,17	2,2
TABLE	0,15	3,2
PAINT-AREA	5,2	45,16

P-DOOR	30,1	1,16
TOOLS:		
STICK	P-CLEANING	
GLOVES	P-CLEANING	
SCREEN	P-CLEANING	
CRESENTWRENCH	OP	
SCREWDRIVER	OP	
PLIERS	OP	
RAG	OP	
OBJECTS:		
PAINT	PAINT-STORAGE	
BUTTON	POWER	
NOZZLE	BOOTH-6	FRAG
WOODEN-BUCK	BOOTH-6	
2X4-BOARD	BOOTH-6	
LEVER	P-CLEANING	FRAG
AIRHOSE	P-CLEANING	FRAG
PAINTCOVER	P-CLEANING	
WINGNUTS	P-CLEANING	FRAG
PAINT-POT	P-CLEANING	
COVER	P-CLEANING	
PAINTCAN	P-CLEANING	FRAG
PAINTCAN-1	P-CLEANING	
PAINTCAN-2	P-CLEANING	
SCREENTANK	P-CLEANING	
SPRAY-TIP	P-CLEANING	
SPRAYGUN	P-CLEANING	FRAG
NUT	P-CLEANING	
THINNER	P-CLEANING	
MIXCAN	P-MIXING	
SCREW	P-MIXING	FRAG
FILTER-CAP	P-MIXING	
FILTER	P-MIXING	
INNER-FILTER	P-MIXING	
SYPHON-TUBE	P-MIXING	
S-HOLDER	P-MIXING	
RAG-1	P-MIXING	FRAG
DOLLY	P-MIXING	
FILL-TUBE	P-MIXING	
AIRMIXER	P-MIXING	
THINNERTANK	P-MIXING	
THINNERPAIL	P-MIXING	
COVERALLS	LOCKERS	
PARTS-BOX	TABLE	
4'X8'-PANEL	TABLE	

PARTS PAINT-AREA
SECTION PAINT-AREA

OPERATORS:
OP PAINT-AREA 25,8 F

From	To	Steps
PAINT-OFFICE	PAINT-STORAGE	103
PAINT-OFFICE	TOOL-ROOM	233
PAINT-OFFICE	THINNER-STORAGE	123
PAINT-OFFICE	POWER	149
PAINT-OFFICE	BOOTH-1	147
PAINT-OFFICE	BOOTH-3	165
PAINT-OFFICE	BOOTH-5	167
PAINT-OFFICE	BOOTH-2	127
PAINT-OFFICE	BOOTH-4	153
PAINT-OFFICE	BOOTH-6	163
PAINT-OFFICE	P-CLEANING	135
PAINT-OFFICE	P-MIXING	133
PAINT-OFFICE	LOCKERS	169
PAINT-OFFICE	FLAM-LIQUID	170
PAINT-OFFICE	TABLE	169
PAINT-OFFICE	PAINT-AREA	133
PAINT-OFFICE	P-DOOR	120
PAINT-STORAGE	TOOL-ROOM	203
PAINT-STORAGE	THINNER-STORAGE	53
PAINT-STORAGE	POWER	63
PAINT-STORAGE	BOOTH-1	61
PAINT-STORAGE	BOOTH-3	63
PAINT-STORAGE	BOOTH-5	75
PAINT-STORAGE	BOOTH-2	43
PAINT-STORAGE	BOOTH-4	59
PAINT-STORAGE	BOOTH-6	73
PAINT-STORAGE	P-CLEANING	49
PAINT-STORAGE	P-MIXING	55
PAINT-STORAGE	LOCKERS	77
PAINT-STORAGE	FLAM-LIQUID	75
PAINT-STORAGE	TABLE	76
PAINT-STORAGE	PAINT-AREA	61
PAINT-STORAGE	P-DOOR	36
TOOL-ROOM	THINNER-STORAGE	217
TOOL-ROOM	POWER	233
TOOL-ROOM	BOOTH-1	231
TOOL-ROOM	BOOTH-3	237

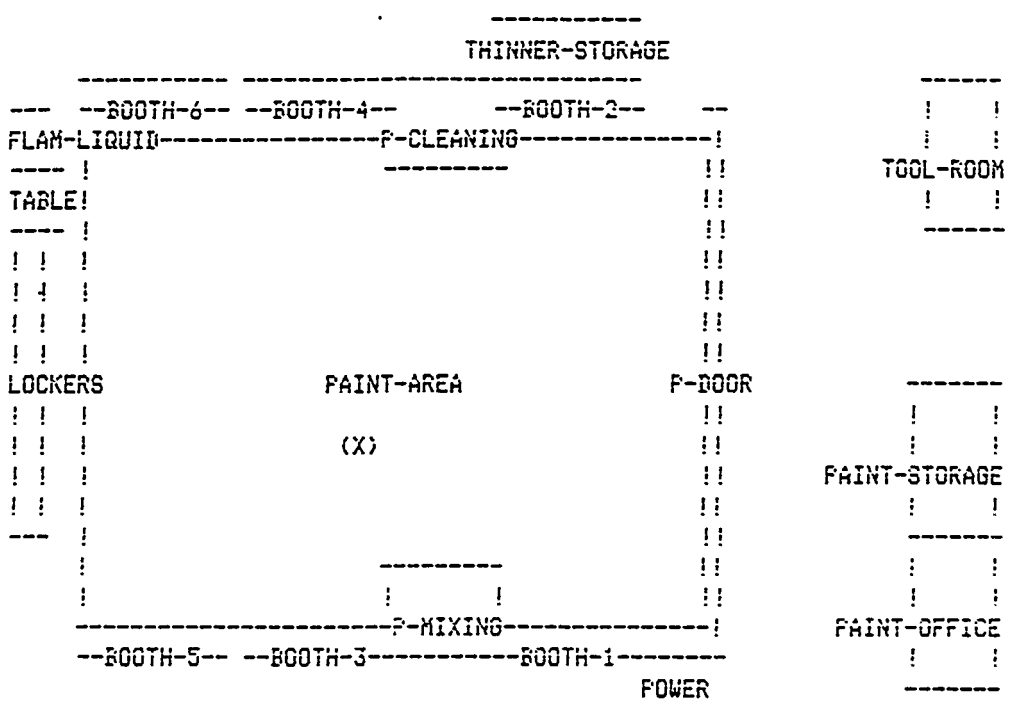
TOOL-ROOM	BOOTH-3	253
TOOL-ROOM	BOOTH-2	219
TOOL-ROOM	BOOTH-4	231
TOOL-ROOM	BOOTH-6	250
TOOL-ROOM	P-CLEANING	225
TOOL-ROOM	P-MIXING	233
TOOL-ROOM	LOCKERS	263
TOOL-ROOM	FLAM-LIQUID	261
TOOL-ROOM	TABLE	262
TOOL-ROOM	PAINT-AREA	233
TOOL-ROOM	P-DOOR	236
THINNER-STORAGE	POWER	36
THINNER-STORAGE	BOOTH-1	38
THINNER-STORAGE	BOOTH-3	45
THINNER-STORAGE	BOOTH-5	53
THINNER-STORAGE	BOOTH-2	26
THINNER-STORAGE	BOOTH-4	40
THINNER-STORAGE	BOOTH-6	47
THINNER-STORAGE	P-CLEANING	33
THINNER-STORAGE	P-MIXING	39
THINNER-STORAGE	LOCKERS	58
THINNER-STORAGE	FLAM-LIQUID	56
THINNER-STORAGE	TABLE	57
THINNER-STORAGE	PAINT-AREA	36
THINNER-STORAGE	P-DOOR	28
POWER	BOOTH-1	14
POWER	BOOTH-3	29
POWER	BOOTH-5	39
POWER	BOOTH-2	27
POWER	BOOTH-4	33
POWER	BOOTH-6	43
POWER	P-CLEANING	30
POWER	P-MIXING	21
POWER	LOCKERS	44
POWER	FLAM-LIQUID	47
POWER	TABLE	46
POWER	PAINT-AREA	28
POWER	P-DOOR	15
BOOTH-1	BOOTH-3	18
BOOTH-1	BOOTH-5	28
BOOTH-1	BOOTH-2	23
BOOTH-1	BOOTH-4	29
BOOTH-1	BOOTH-6	33
BOOTH-1	P-CLEANING	25
BOOTH-1	P-MIXING	14
BOOTH-1	LOCKERS	35
BOOTH-1	FLAM-LIQUID	41

LAYOUTS AND MATERIAL FLOW

BOOTH-1	TABLE	39
BOOTH-1	PAINT-AREA	21
BOOTH-1	P-DOOR	17
BOOTH-3	BOOTH-5	18
BOOTH-3	BOOTH-2	29
BOOTH-3	BOOTH-4	23
BOOTH-3	BOOTH-6	26
BOOTH-3	P-CLEANING	26
BOOTH-3	P-MIXING	11
BOOTH-3	LOCKERS	21
BOOTH-3	FLAM-LIQUID	29
BOOTH-3	TABLE	26
BOOTH-3	PAINT-AREA	15
BOOTH-3	P-DOOR	29
BOOTH-5	BOOTH-2	33
BOOTH-5	BOOTH-4	26
BOOTH-5	BOOTH-6	23
BOOTH-5	P-CLEANING	30
BOOTH-5	P-MIXING	20
BOOTH-5	LOCKERS	16
BOOTH-5	FLAM-LIQUID	22
BOOTH-5	TABLE	19
BOOTH-5	PAINT-AREA	17
BOOTH-5	P-DOOR	37
BOOTH-2	BOOTH-4	18
BOOTH-2	BOOTH-6	28
BOOTH-2	P-CLEANING	13
BOOTH-2	P-MIXING	24
BOOTH-2	LOCKERS	34
BOOTH-2	FLAM-LIQUID	32
BOOTH-2	TABLE	33
BOOTH-2	PAINT-AREA	21
BOOTH-2	P-DOOR	17
BOOTH-4	BOOTH-6	13
BOOTH-4	P-CLEANING	11
BOOTH-4	P-MIXING	23
BOOTH-4	LOCKERS	22
BOOTH-4	FLAM-LIQUID	20
BOOTH-4	TABLE	21
BOOTH-4	PAINT-AREA	17
BOOTH-4	P-DOOR	20
BOOTH-6	P-CLEANING	21
BOOTH-6	P-MIXING	29
BOOTH-6	LOCKERS	15
BOOTH-6	FLAM-LIQUID	9
BOOTH-6	TABLE	11
BOOTH-6	PAINT-AREA	18

BOOTH-6	P-DOOR	38
P-CLEANING	P-MIXING	24
P-CLEANING	LOCKERS	27
P-CLEANING	FLAM-LIQUID	26
P-CLEANING	TABLE	27
P-CLEANING	PAINT-AREA	18
P-CLEANING	P-DOOR	23
P-MIXING	LOCKERS	26
P-MIXING	FLAM-LIQUID	32
P-MIXING	TABLE	29
P-MIXING	PAINT-AREA	16
P-MIXING	P-DOOR	23
LOCKERS	FLAM-LIQUID	14
LOCKERS	TABLE	9
LOCKERS	PAINT-AREA	19
LOCKERS	P-DOOR	43
FLAM-LIQUID	TABLE	9
FLAM-LIQUID	PAINT-AREA	20
FLAM-LIQUID	P-DOOR	46
TABLE	PAINT-AREA	19
TABLE	P-DOOR	43
PAINT-AREA	P-DOOR	27

LAYOUTS AND MATERIAL FLOW



Name	Location		Body/Fras/PT
WORKPLACES:			
PAINT-OFFICE	65,0	6,5	
PAINT-STORAGE	65,5	6,5	
TOOL-ROOM	66,15	5,5	
THINNER-STORAGE	35,21	10,1	
POWER	46,0	4,1	
BOOTH-1	35,1	10,1	
BOOTH-3	17,1	10,1	
BOOTH-5	5,1	10,1	
BOOTH-2	35,19	10,1	
BOOTH-4	17,19	10,1	
BOOTH-6	5,19	10,1	
P-CLEANING	27,17	8,3	
P-MIXING	27,1	8,3	
LOCKERS	0,5	2,10	
FLAM-LIQUID	0,17	2,2	
TABLE	0,15	3,2	
PAINT-AREA	5,2	45,16	
P-DOOR	50,1	1,18	

LAYOUTS AND MATERIAL FLOW

From	To	Steps
TOOLS:		
STICK	P-CLEANING	
GLOVES	P-CLEANING	
SCREEN	P-CLEANING	
CRESENTWRENCH	OP	
SCREWDRIVER	OP	
PLIERS	OP	
RAG	OP	
OBJECTS:		
PAINT	PAINT-STORAGE	
BUTTON	POWER	
LEVER	BOOTH-6	FRAG
NOZZLE	BOOTH-6	FRAG
PAINTCAN-2	P-CLEANING	
SCREENTANK	P-CLEANING	
AIRHOSE	P-CLEANING	FRAG
PAINTCOVER	P-CLEANING	
WINGNUTS	P-CLEANING	FRAG
PAINT-POT	P-CLEANING	
COVER	P-CLEANING	
PAINTCAN	P-CLEANING	FRAG
PAINTCAN-1	P-CLEANING	
FILL-TUBE	P-MIXING	
AIRMIXER	P-MIXING	
THINNERTANK	P-MIXING	
MIXCAN	P-MIXING	
SPRAY-TIP	P-MIXING	
THINNERPAIL	P-MIXING	
SPRAYGUN	P-MIXING	FRAG
SCREW	P-MIXING	FRAG
FILTER-CAP	P-MIXING	
FILTER	P-MIXING	
INNER-FILTER	P-MIXING	
SYPHON-TUBE	P-MIXING	
S-HOLDER	P-MIXING	
RAG-1	P-MIXING	FRAG
DOLLY	P-MIXING	
COVERALLS	LOCKERS	
OPERATORS:		
OP	PAINT-AREA	25,6 B

PAINT-OFFICE	PAINT-STORAGE	103
PAINT-OFFICE	TOOL-ROOM	233
PAINT-OFFICE	THINNER-STORAGE	123
PAINT-OFFICE	POWER	149
PAINT-OFFICE	BOOTH-1	147
PAINT-OFFICE	BOOTH-3	165
PAINT-OFFICE	BOOTH-5	167
PAINT-OFFICE	BOOTH-2	127
PAINT-OFFICE	BOOTH-4	153
PAINT-OFFICE	BOOTH-6	163
PAINT-OFFICE	P-CLEANING	133
PAINT-OFFICE	P-MIXING	153
PAINT-OFFICE	LOCKERS	169
PAINT-OFFICE	FLAM-LIQUID	170
PAINT-OFFICE	TABLE	169
PAINT-OFFICE	PAINT-AREA	153
PAINT-OFFICE	P-DOOR	120
PAINT-STORAGE	TOOL-ROOM	203
PAINT-STORAGE	THINNER-STORAGE	33
PAINT-STORAGE	POWER	63
PAINT-STORAGE	BOOTH-1	61
PAINT-STORAGE	BOOTH-3	63
PAINT-STORAGE	BOOTH-5	75
PAINT-STORAGE	BOOTH-2	43
PAINT-STORAGE	BOOTH-4	59
PAINT-STORAGE	BOOTH-6	73
PAINT-STORAGE	P-CLEANING	49
PAINT-STORAGE	P-MIXING	55
PAINT-STORAGE	LOCKERS	77
PAINT-STORAGE	FLAM-LIQUID	75
PAINT-STORAGE	TABLE	76
PAINT-STORAGE	PAINT-AREA	61
PAINT-STORAGE	P-DOOR	36
TOOL-ROOM	THINNER-STORAGE	217
TOOL-ROOM	POWER	233
TOOL-ROOM	BOOTH-1	231
TOOL-ROOM	BOOTH-3	237
TOOL-ROOM	BOOTH-5	255
TOOL-ROOM	BOOTH-2	217
TOOL-ROOM	BOOTH-4	231
TOOL-ROOM	BOOTH-6	250
TOOL-ROOM	P-CLEANING	225
TOOL-ROOM	P-MIXING	233
TOOL-ROOM	LOCKERS	263
TOOL-ROOM	FLAM-LIQUID	261
TOOL-ROOM	TABLE	262
TOOL-ROOM	PAINT-AREA	233

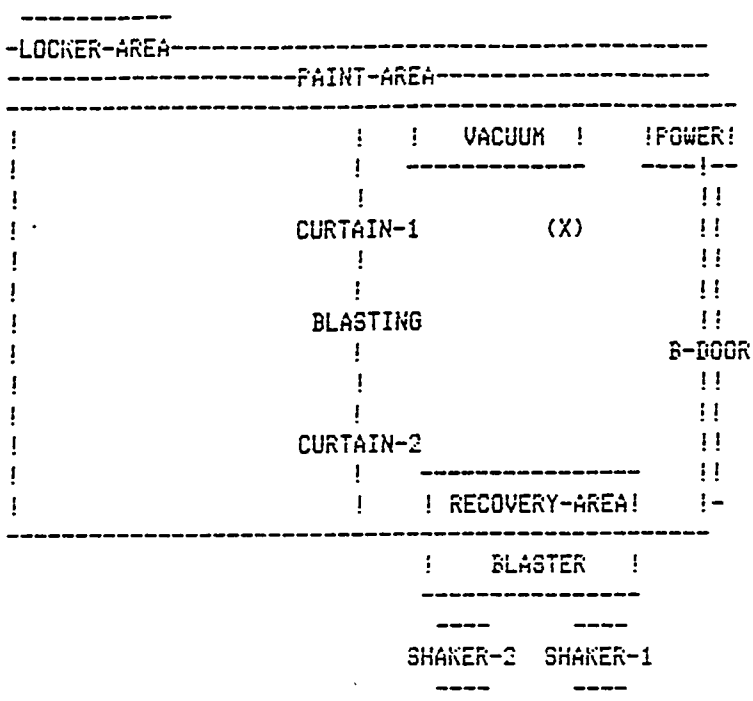
TOOL-ROOM	P-DOOR	236
THINNER-STORAGE	POWER	38
THINNER-STORAGE	BOOTH-1	38
THINNER-STORAGE	BOOTH-3	45
THINNER-STORAGE	BOOTH-5	55
THINNER-STORAGE	BOOTH-2	26
THINNER-STORAGE	BOOTH-4	40
THINNER-STORAGE	BOOTH-6	47
THINNER-STORAGE	P-CLEANING	33
THINNER-STORAGE	P-MIXING	39
THINNER-STORAGE	LOCKERS	58
THINNER-STORAGE	FLAM-LIQUID	56
THINNER-STORAGE	TABLE	57
THINNER-STORAGE	PAINT-AREA	36
THINNER-STORAGE	P-DOOR	28
POWER	BOOTH-1	14
POWER	BOOTH-3	29
POWER	BOOTH-5	39
POWER	BOOTH-2	27
POWER	BOOTH-4	33
POWER	BOOTH-6	43
POWER	P-CLEANING	30
POWER	P-MIXING	21
POWER	LOCKERS	44
POWER	FLAM-LIQUID	47
POWER	TABLE	46
POWER	PAINT-AREA	28
POWER	P-DOOR	15
BOOTH-1	BOOTH-3	16
BOOTH-1	BOOTH-5	28
BOOTH-1	BOOTH-2	23
BOOTH-1	BOOTH-4	29
BOOTH-1	BOOTH-6	33
BOOTH-1	P-CLEANING	25
BOOTH-1	P-MIXING	14
BOOTH-1	LOCKERS	35
BOOTH-1	FLAM-LIQUID	41
BOOTH-1	TABLE	39
BOOTH-1	PAINT-AREA	21
BOOTH-1	P-DOOR	17
BOOTH-3	BOOTH-5	16
BOOTH-3	BOOTH-2	29
BOOTH-3	BOOTH-4	23
BOOTH-3	BOOTH-6	26
BOOTH-3	P-CLEANING	26
BOOTH-3	P-MIXING	11
BOOTH-3	LOCKERS	21

BOOTH-3	FLAM-LIQUID	29
BOOTH-3	TABLE	26
BOOTH-3	PAINT-AREA	13
BOOTH-3	P-DOOR	29
BOOTH-5	BOOTH-2	33
BOOTH-5	BOOTH-4	26
BOOTH-5	BOOTH-6	23
BOOTH-5	P-CLEANING	30
BOOTH-5	P-MIXING	20
BOOTH-5	LOCKERS	16
BOOTH-5	FLAM-LIQUID	22
BOOTH-5	TABLE	19
BOOTH-5	PAINT-AREA	17
BOOTH-5	P-DOOR	37
BOOTH-2	BOOTH-4	18
BOOTH-2	BOOTH-6	28
BOOTH-2	P-CLEANING	13
BOOTH-2	P-MIXING	24
BOOTH-2	LOCKERS	34
BOOTH-2	FLAM-LIQUID	32
BOOTH-2	TABLE	33
BOOTH-2	PAINT-AREA	21
BOOTH-2	P-DOOR	17
BOOTH-4	BOOTH-6	13
BOOTH-4	P-CLEANING	11
BOOTH-4	P-MIXING	23
BOOTH-4	LOCKERS	22
BOOTH-4	FLAM-LIQUID	20
BOOTH-4	TABLE	21
BOOTH-4	PAINT-AREA	17
BOOTH-4	P-DOOR	30
BOOTH-6	P-CLEANING	21
BOOTH-6	P-MIXING	29
BOOTH-6	LOCKERS	15
BOOTH-6	FLAM-LIQUID	9
BOOTH-6	TABLE	11
BOOTH-6	PAINT-AREA	18
BOOTH-6	P-DOOR	38
P-CLEANING	P-MIXING	24
P-CLEANING	LOCKERS	29
P-CLEANING	FLAM-LIQUID	26
P-CLEANING	TABLE	27
P-CLEANING	PAINT-AREA	16
P-CLEANING	P-DOOR	23
P-MIXING	LOCKERS	26
P-MIXING	FLAM-LIQUID	32
P-MIXING	TABLE	29

LAYOUTS AND MATERIAL FLOW

P-MIXING	PAINT-AREA	18
P-MIXING	P-DOOR	23
LOCKERS	FLAM-LIQUID	14
LOCKERS	TABLE	9
LOCKERS	PAINT-AREA	19
LOCKERS	P-DOOR	43
FLAM-LIQUID	TABLE	9
FLAM-LIQUID	PAINT-AREA	20
FLAM-LIQUID	P-DOOR	46
TABLE	PAINT-AREA	19
TABLE	P-DOOR	43
PAINT-AREA	P-DOOR	27

LAYOUTS AND MATERIAL FLOW



Name	Location		Body/Frag/PT
WORKPLACES:			
BLASTING	0,5	50,14	
BLASTER	30,3	15,2	
VACUUM	29,17	12,2	
RECOVERY-AREA	30,5	15,2	
POWER	46,17	6,2	
CURTAIN-1	25,12	0,7	
B-DOOR	50,6	1,11	
SHAKER-1	41,0	3,2	
SHAKER-2	31,0	3,2	
CURTAIN-2	25,5	0,7	
PAINT-AREA	0,20	50,1	
LOCKER-AREA	1,21	10,1	
TOOLS:			
PLIERS	OP		
WRENCH	OP		
RAG	OP		
SCREWDRIVER	OP		

LAYOUTS AND MATERIAL FLOW

OBJECTS:		
HELMET	BLASTING	
STRAP	BLASTING	FRAG
CAPE	BLASTING	
WOODEN-WEDGE	BLASTING	
B-N-SWITCH	BLASTING	
BLAST-HOSE	BLASTING	
BOBCAT	BLASTING	
VACUUM-HOSE	BLASTING	
GRIT	BLASTING	
GLOVE	BLASTING	
LEVER	BLASTING	FRAG
SWITCH	BLASTING	FRAG
PLASTIC	BLASTING	FRAG
CLUTCH-PEDAL	BLASTING	FRAG
BUTTON	BLASTER	FRAG
AIRHOSE	RECOVERY-AREA	
SHOVEL	RECOVERY-AREA	
WALLRACK	RECOVERY-AREA	
POWER-SWEEPER	B-DOOR	
BROOM	B-DOOR	
LOCKER	LOCKER-AREA	
TAPE	LOCKER-AREA	FRAG
LINER	LOCKER-AREA	
EARPLUGS	LOCKER-AREA	
ZIPPER	LOCKER-AREA	
BOX	LOCKER-AREA	
COVERALLS	LOCKER-AREA	
HARDHAT	LOCKER-AREA	
EQUIPMENT:		
TRACTOR-SWEEPER	BLASTING	
OPERATORS:		
OP	BLASTING	40,15 B

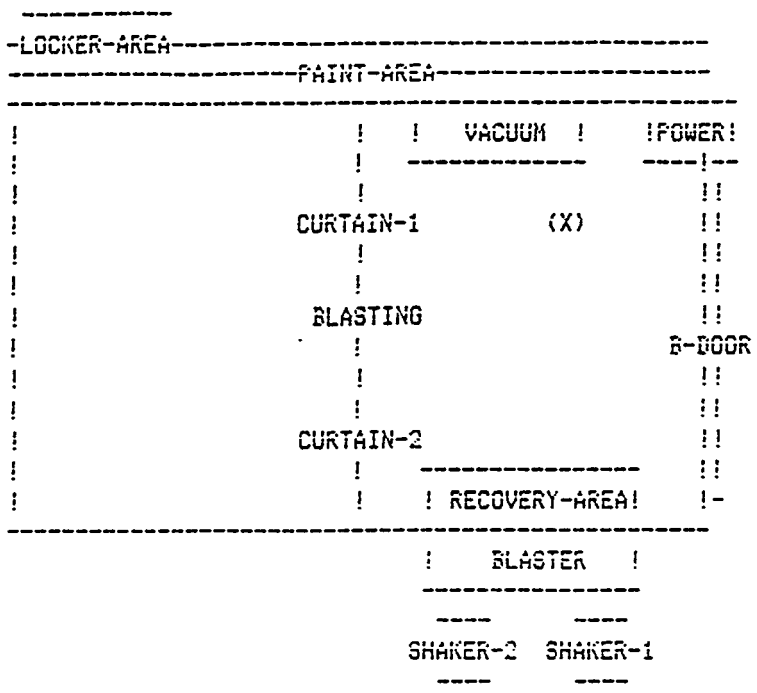
From	To	Steps
BLASTING	BLASTER	19
BLASTING	VACUUM	19
BLASTING	RECOVERY-AREA	22
BLASTING	POWER	25
BLASTING	CURTAIN-1	13
BLASTING	B-DOOR	22
BLASTING	SHAKER-1	46

BLASTING	SHAKER-2	33
BLASTING	CURTAIN-2	13
BLASTING	PAINT-AREA	50
BLASTING	LOCKER-AREA	75
BLASTER	VACUUM	26
BLASTER	RECOVERY-AREA	9
BLASTER	POWER	29
BLASTER	CURTAIN-1	26
BLASTER	B-DOOR	19
BLASTER	SHAKER-1	30
BLASTER	SHAKER-2	36
BLASTER	CURTAIN-2	14
BLASTER	PAINT-AREA	75
BLASTER	LOCKER-AREA	100
VACUUM	RECOVERY-AREA	24
VACUUM	POWER	11
VACUUM	CURTAIN-1	17
VACUUM	B-DOOR	17
VACUUM	SHAKER-1	43
VACUUM	SHAKER-2	53
VACUUM	CURTAIN-2	25
VACUUM	PAINT-AREA	40
VACUUM	LOCKER-AREA	75
RECOVERY-AREA	POWER	28
RECOVERY-AREA	CURTAIN-1	25
RECOVERY-AREA	B-DOOR	18
RECOVERY-AREA	SHAKER-1	32
RECOVERY-AREA	SHAKER-2	40
RECOVERY-AREA	CURTAIN-2	14
RECOVERY-AREA	PAINT-AREA	65
RECOVERY-AREA	LOCKER-AREA	95
POWER	CURTAIN-1	26
POWER	B-DOOR	16
POWER	SHAKER-1	46
POWER	SHAKER-2	54
POWER	CURTAIN-2	28
POWER	PAINT-AREA	30
POWER	LOCKER-AREA	50
CURTAIN-1	B-DOOR	26
CURTAIN-1	SHAKER-1	48
CURTAIN-1	SHAKER-2	56
CURTAIN-1	CURTAIN-2	26
CURTAIN-1	PAINT-AREA	65
CURTAIN-1	LOCKER-AREA	75
B-DOOR	SHAKER-1	31
B-DOOR	SHAKER-2	39
B-DOOR	CURTAIN-2	26

LAYOUTS AND MATERIAL FLOW

B-DOOR	PAINT-AREA	30
B-DOOR	LOCKER-AREA	70
SHAKER-1	SHAKER-2	11
SHAKER-1	CURTAIN-2	43
SHAKER-1	PAINT-AREA	96
SHAKER-1	LOCKER-AREA	125
SHAKER-2	CURTAIN-2	51
SHAKER-2	PAINT-AREA	106
SHAKER-2	LOCKER-AREA	134
CURTAIN-2	PAINT-AREA	70
CURTAIN-2	LOCKER-AREA	80
PAINT-AREA	LOCKER-AREA	25

LAYOUTS AND MATERIAL FLOW



Name	Location		Body/Frag/FT
WORKPLACES:			
BLASTING	0,5	50,14	
BLASTER	30,3	15,2	
VACUUM	29,17	12,2	
RECOVERY-AREA	30,5	15,2	
POWER	46,17	6,2	
CURTAIN-1	25,12	0,7	
B-DOOR	50,6	1,11	
SHAKER-1	41,0	3,2	
SHAKER-2	31,0	3,2	
CURTAIN-2	25,5	0,7	
PAINT-AREA	0,20	50,1	
LOCKER-AREA	1,21	10,1	
TOOLS:			
PLIERS	OP		
WRENCH	OP		
RAG	OP		
SCREWDRIVER	OP		

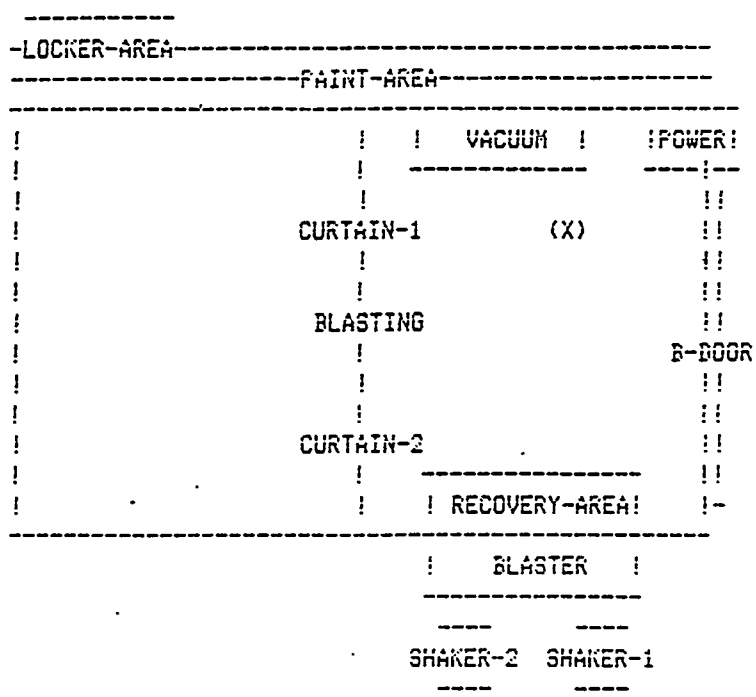
OBJECTS:		
HELMET	BLASTING	
STRAP	BLASTING	FRAG
CAPE	BLASTING	
WOODEN-WEDGE	BLASTING	
B-N-SWITCH	BLASTING	
BLAST-HOSE	BLASTING	
BOBCAT	BLASTING	
VACUUM-HOSE	BLASTING	
GRIT	BLASTING	
GLOVE	BLASTING	FRAG
LEVER	BLASTING	FRAG
SWITCH	BLASTING	FRAG
PLASTIC	BLASTING	FRAG
CLUTCH-PEDAL	BLASTING	FRAG
BUTTON	BLASTER	FRAG
AIRHOSE	RECOVERY-AREA	
SHOVEL	RECOVERY-AREA	
WALLRACK	RECOVERY-AREA	
POWER-SWEEPER	B-DOOR	
BROOM	B-DOOR	
LOCKER	LOCKER-AREA	
TAPE	LOCKER-AREA	FRAG
LINER	LOCKER-AREA	
EARPLUGS	LOCKER-AREA	
ZIPPER	LOCKER-AREA	
BOX	LOCKER-AREA	
COVERALLS	LOCKER-AREA	
HARDHAT	LOCKER-AREA	
EQUIPMENT:		
TRACTOR-SWEEPER	BLASTING	
OPERATORS:		
OP	BLASTING	40,15 B

From	To	Steps
BLASTING	BLASTER	19
BLASTING	VACUUM	19
BLASTING	RECOVERY-AREA	22
BLASTING	POWER	25
BLASTING	CURTAIN-1	13
BLASTING	B-DOOR	22
BLASTING	SHAKER-1	46

BLASTING	SHAKER-2	33
BLASTING	CURTAIN-2	13
BLASTING	PAINT-AREA	50
BLASTING	LOCKER-AREA	75
BLASTER	VACUUM	26
BLASTER	RECOVERY-AREA	9
BLASTER	POWER	29
BLASTER	CURTAIN-1	26
BLASTER	B-DOOR	19
BLASTER	SHAKER-1	30
BLASTER	SHAKER-2	36
BLASTER	CURTAIN-2	14
BLASTER	PAINT-AREA	75
BLASTER	LOCKER-AREA	100
VACUUM	RECOVERY-AREA	24
VACUUM	POWER	11
VACUUM	CURTAIN-1	17
VACUUM	B-DOOR	17
VACUUM	SHAKER-1	43
VACUUM	SHAKER-2	53
VACUUM	CURTAIN-2	23
VACUUM	PAINT-AREA	40
VACUUM	LOCKER-AREA	75
RECOVERY-AREA	POWER	28
RECOVERY-AREA	CURTAIN-1	25
RECOVERY-AREA	B-DOOR	18
RECOVERY-AREA	SHAKER-1	32
RECOVERY-AREA	SHAKER-2	40
RECOVERY-AREA	CURTAIN-2	14
RECOVERY-AREA	PAINT-AREA	65
RECOVERY-AREA	LOCKER-AREA	95
POWER	CURTAIN-1	26
POWER	B-DOOR	16
POWER	SHAKER-1	46
POWER	SHAKER-2	54
POWER	CURTAIN-2	28
POWER	PAINT-AREA	30
POWER	LOCKER-AREA	50
CURTAIN-1	B-DOOR	26
CURTAIN-1	SHAKER-1	48
CURTAIN-1	SHAKER-2	56
CURTAIN-1	CURTAIN-2	26
CURTAIN-1	PAINT-AREA	65
CURTAIN-1	LOCKER-AREA	75
B-DOOR	SHAKER-1	31
B-DOOR	SHAKER-2	39
B-DOOR	CURTAIN-2	26

B-DOOR	PAINT-AREA 30
B-DOOR	LOCKER-AREA 70
SHAKER-1	SHAKER-2 11
SHAKER-1	CURTAIN-2 43
SHAKER-1	PAINT-AREA 96
SHAKER-1	LOCKER-AREA 125
SHAKER-2	CURTAIN-2 31
SHAKER-2	PAINT-AREA 106
SHAKER-2	LOCKER-AREA 134
CURTAIN-2	PAINT-AREA 70
CURTAIN-2	LOCKER-AREA 80
PAINT-AREA	LOCKER-AREA 25

LAYOUTS AND MATERIAL FLOW



Name	Location		Body/Frag/PT
WORKPLACES:			
BLASTING	0,5	50,14	
BLASTER	30,3	15,2	
VACUUM	29,17	12,2	
RECOVERY-AREA	30,5	15,2	
POWER	46,17	6,2	
CURTAIN-1	25,12	0,7	
B-DOOR	50,6	1,11	
SHAKER-1	41,0	3,2	
SHAKER-2	31,0	3,2	
CURTAIN-2	25,5	0,7	
PAINT-AREA	0,20	50,1	
LOCKER-AREA	1,21	10,1	
TOOLS:			
PLIERS	OF		
WRENCH	OF		
RAG	OF		
SCREWDRIVER	OF		

OBJECTS:		
HELMET	BLASTING	
STRAP	BLASTING	FRAG
CAPE	BLASTING	
WOODEN-WEDGE	BLASTING	
B-N-SWITCH	BLASTING	
BLAST-HOSE	BLASTING	
BOBCAT	BLASTING	
VACUUM-HOSE	BLASTING	
GRIT	BLASTING	
GLOVE	BLASTING	FRAG
LEVER	BLASTING	FRAG
SWITCH	BLASTING	FRAG
PLASTIC	BLASTING	FRAG
CLUTCH-PEDAL	BLASTING	FRAG
BUTTON	BLASTER	FRAG
GLASS	BLASTER	FRAG
CABINET	BLASTER	
WALLRACK	RECOVERY-AREA	
AIRHOSE	RECOVERY-AREA	
SHOVEL	RECOVERY-AREA	
POWER-SWEEPER	B-DOOR	
BROOM	B-DOOR	
LINER	LOCKER-AREA	
EARPLUGS	LOCKER-AREA	
ZIPPER	LOCKER-AREA	
BOX	LOCKER-AREA	
COVERALLS	LOCKER-AREA	
HARDHAT	LOCKER-AREA	
LOCKER	LOCKER-AREA	
TAPE	LOCKER-AREA	FRAG
EQUIPMENT:		
TRACTOR-SWEEPER	BLASTING	
OPERATORS:		
OP	BLASTING	40,13 B

From	To	Steps
BLASTING	BLASTER	19
BLASTING	VACUUM	19
BLASTING	RECOVERY-AREA	22
BLASTING	POWER	25
BLASTING	CURTAIN-1	13

BLASTING	B-DOOR	22
BLASTING	SHAKER-1	46
BLASTING	SHAKER-2	53
BLASTING	CURTAIN-2	13
BLASTING	PAINT-AREA	50
BLASTING	LOCKER-AREA	75
BLASTER	VACUUM	26
BLASTER	RECOVERY-AREA	9
BLASTER	POWER	29
BLASTER	CURTAIN-1	26
BLASTER	B-DOOR	19
BLASTER	SHAKER-1	30
BLASTER	SHAKER-2	36
BLASTER	CURTAIN-2	14
BLASTER	PAINT-AREA	75
BLASTER	LOCKER-AREA	100
VACUUM	RECOVERY-AREA	24
VACUUM	POWER	11
VACUUM	CURTAIN-1	17
VACUUM	B-DOOR	17
VACUUM	SHAKER-1	45
VACUUM	SHAKER-2	53
VACUUM	CURTAIN-2	25
VACUUM	PAINT-AREA	40
VACUUM	LOCKER-AREA	75
RECOVERY-AREA	POWER	28
RECOVERY-AREA	CURTAIN-1	25
RECOVERY-AREA	B-DOOR	18
RECOVERY-AREA	SHAKER-1	32
RECOVERY-AREA	SHAKER-2	40
RECOVERY-AREA	CURTAIN-2	14
RECOVERY-AREA	PAINT-AREA	65
RECOVERY-AREA	LOCKER-AREA	95
POWER	CURTAIN-1	26
POWER	B-DOOR	16
POWER	SHAKER-1	46
POWER	SHAKER-2	54
POWER	CURTAIN-2	28
POWER	PAINT-AREA	30
POWER	LOCKER-AREA	50
CURTAIN-1	B-DOOR	26
CURTAIN-1	SHAKER-1	48
CURTAIN-1	SHAKER-2	56
CURTAIN-1	CURTAIN-2	26
CURTAIN-1	PAINT-AREA	65
CURTAIN-1	LOCKER-AREA	75
B-DOOR	SHAKER-1	31

LAYOUTS AND MATERIAL FLOW

B-DOOR	
B-DOOR	
B-DOOR	
B-DOOR	
SHAKER-1	
SHAKER-1	
SHAKER-1	
SHAKER-1	
SHAKER-2	
SHAKER-2	
SHAKER-2	
CURTAIN-2	
CURTAIN-2	
PAINT-AREA	
SHAKER-2	39
CURTAIN-2	26
PAINT-AREA	50
LOCKER-AREA	70
SHAKER-2	11
CURTAIN-2	43
PAINT-AREA	96
LOCKER-AREA	125
CURTAIN-2	51
PAINT-AREA	106
LOCKER-AREA	134
PAINT-AREA	70
LOCKER-AREA	80
LOCKER-AREA	25

LAYOUTS AND MATERIAL FLOW

4.2 DEPARTMENT OR COST CENTER LAYOUTS

4.3 MATERIAL FLOW

SECTION 5
PROCESS DATA

5.1 DERIVATION OF PROCESS TIMES

5.2 TECHNICAL PROCESSES

5.3 TOOL LIFE

686. TAPE (MAKE READY) SECTION FOR PAINTING WITH MASKING TAPE AT PAINTING AREA
PER 1 OPG: 1 27-APR-83
MASK AREA NOT TO BE PAINTED, MULTIPLY BY THE NO OF EDGES,BULKHEAD LINES,STIFFENER LINES,STIFFENERS,ETC.
* AVERAGE 4' LENGTH OF TAPE APPLIED
OP BEGINS AT PAINT-AREA

1 MOVE TAPE FROM TABLE TO OP
2 GET+MANIPULATE TAPE FROM OP TO OP
3 POSITION TAPE FROM OP TO SECTION
4 TURN WALK 3 STEPS TAPE AT SECTION AND ALIGN F 3
5 PRESS WALK 3 STEPS TAPE AT SECTION F 3
6 MANIPULATE TAPE AT SECTION

691. (MAKE READY) OPERATOR ON GLOVE AT <PAINT-AREA
PER 1 OPG: 1 13-APR-83
GLOVES ARE WORN ONLY DURING PAINTING AND CLEANUP OF PAINTING EQUIPMENT
OP BEGINS AT PAINT-AREA

1 WALK TO P-CLEANING
2 REMOVE GLOVE FROM P-CLEANING TO OP F 2
3 MANIPULATE GLOVE AT OP F 2

741. (MAKE READY) PLACE HELMET ON HEAD AT BLASTING
PER 1 OPG: 1 10-AUG-83
FRESH AIR SUPPLY USED FOR BLASTING
OP BEGINS AT BLASTING

1 GET+MOVE HELMET TO BLASTING WITH 20 STEPS
2 PUSH BUTTON AT BLASTER
3 PUSH BUTTON AT RECOVERY-AREA
4 PLACE HELMET WITH BEND TO BLASTING
5 HOLD+POSITION HELMET TO OP
6 MANIPULATE HELMET AT OP (PUT HELMET ON)
7 PULL CAPE AT OP AND ADJUST PF 2 (6)

742. (MAKE READY) PUT COVERALLS ON OPERATOR AT LOCKER-AREA
PER 1 OPG: 1 11-AUG-83
GET READY FOR BLASTING
OP BEGINS AT BLASTING

1 OPEN LOCKER AT LOCKER-AREA
2 GET+PLACE WITH BEND COVERALLS FROM LOCKER TO OP
3 HOLD+MANIPULATE COVERALLS AT OP (PUT ON LEGS) F 2
4 PULL COVERALLS AT OP AND ADJUST
5 HOLD+HANDLE COVERALLS AT OP AND ADJUST (PUT ON ARMS) F 2
6 GET+PULL ZIPPER AT OP

743. (MAKE READY) TAPE COVERALLS ON OP AT LOCKER
PER 1 OPG: 1 11-AUG-83
GET READY FOR BLASTING
OP BEGINS AT LOCKER-AREA

1 GET+MOVE TAPE FROM LOCKER TO OP
2 GET+PULL TAPE WITH BEND AT OP F 2
3 HOLD+POSITION TAPE FROM OP TO COVERALLS F 2
4 HOLD+TURN TAPE AT COVERALLS F 6
5 HOLD+PULL TAPE AT OP F 2
6 PLACE TAPE FROM OP TO LOCKER

744. (MAKE READY) GLOVES HARDHAT LINER EARPLUGS FOR OP AT BLASTING
PER 1 OPG: 1 11-AUG-83
OP BEGINS AT LOCKER-AREA

1 MOVE GLOVES FROM LOCKER TO OP
2 MOVE HARDHAT FROM LOCKER TO OP
3 MOVE LINER EARPLUGS FROM LOCKER TO OP
4 HOLD+POSITION GLOVES HARDHAT LINER EARPLUGS FROM OP TO BLASTING WITH DOOR PF 2 (5)

745. (MAKE READY) PLACE EAR PLUGS IN EAR AT LOCKER
PER 1 OPS: 1 11-AUG-83
OP BEGINS AT LOCKER-AREA

1 PLACE EARPLUGS TO OP
2 OPEN BOX AT LOCKER
3 GET+MANIPULATE EARPLUGS AT OP F 2
4 HOLD+POSITION EARPLUGS FROM-OP TO OP F 2

746. (TEAR DOWN) OPERATOR FOR BLASTER CLEAN UP AT BLASTING AREA
PER 1 OPS: 1 11-AUG-83
REMOVE GLOVES HELMET AFTER BLASTING AND TURN OFF BLASTER
OP BEGINS AT BLASTING

1 GET+REMOVE WOODEN-WEDGE FROM B-N-SWITCH TO BLASTING WITH BEND
2 GET+REPOSITION GLOVE FROM OP TO BLASTING F 2
3 GET+MANIPULATE CAPE HELMET AT OP
4 HOLD+REPLACE CAPE HELMET FROM OP TO BLASTING WITH BEND
5 PUSH BUTTON AT BLASTER (SHUT OFF BLASTER)

747. (CLEANUP) GRIT IN BLASTING BOOTH WITH POWER SWEEPER AT BLASTING AREA
PER 1 OPS: 1 11-AUG-83
PICKUP GRIT WITH POWER SWEEPER
* AD 2ND OPERATOR CLEANUP
OP BEGINS AT BLASTING

1 PUSH BUTTON AT VACUUM
2 PUSH BUTTON AT POWER WITH DOOR (RAISE B-DOOR)
3 WALK 50 STEPS TO B-DOOR
4 CLIMB PUSH BUTTON AT POWER-SWEEPER
5 MOVE POWER-SWEEPER TO BLASTING
6 OPERATE POWER-SWEEPER AT BLASTING PT 120 S F 14
7 PUSH BUTTON AT POWER-SWEEPER WITH CLIMB
8 PUSH BUTTON AT VACUUM
9 PUSH BUTTON AT RECOVERY-AREA AND RETURN AT PAINT-AREA

748. (CLEANUP) GRIT IN BLASTING BOOTH WITH BROOM & SHOVEL AT BLASTING AREA
PER 1 OPS: 1 11-AUG-83
SIMO WHEN USED WITH POWER-SWEEPER
OP BEGINS AT BLASTING

1 GET+MOVE BROOM FROM B-DOOR TO OP
2 HOLD+MANEUVER BROOM AT OP PT 60 3 PF 4 (5)
3 GET+PICKUP WITH BEND BLAST-HOSE FROM BLASTING TO OP F 2
4 HOLD+POSITION BLAST-HOSE FROM OP TO WALLRACK F 2
5 GET+CRANK BLAST-HOSE 20 REVS AT WALLRACK
6 GET+MOVE WITH BEND HELMET FROM BLASTING TO RECOVERY-AREA
7 GET+CRANK AIRHOSE 20 REVS AT WALLRACK
8 HOLD+POSITION HELMET AIRHOSE TO WALLRACK
9 GET+MANEUVER SHOVEL AT RECOVERY-AREA PF 8 (4)

749. (CLEANUP) GRIT IN BLAST BOOTH WITH BOBCAT FRONT END LOADER AT BLAST AREA
PER 1 OPS: 1 11-AUG-83
SIMO WHEN USED WITH POWER-SWEEPER
OP BEGINS AT B-DOOR

1 CLIMB PUSH BUTTON AT BOBCAT
2 OPERATE BOBCAT AT BLASTING PT 15 3 F 12
3 PUSH BUTTON AT BOBCAT WITH CLIMB

750. (CLEANUP) GRIT IN BLASTING BOOTH WITH VACUUM AT BLASTING AREA
PER 1 OPS: 1 11-AUG-83
USED WTIH POWER SWEEPER
OP BEGINS AT RECOVERY-AREA

1 GET+PLACE WITH BEND VACUUM-HOSE FROM BLASTING TO GRIT
2 GET+HOLD WITH BEND VACUUM-HOSE TO GRIT F 12
3 GET+PICKUP WITH BEND VACUUM-HOSE TO GRIT (AFTER BOBCAT CLEANUP)
8

751. (CLEAN UP) GRIT IN BLASTING BOOTH WITH TRACTOR-SWEEPER AT BLASTING
PER 1 OPS: 1 11-AUG-83
STARTING AND TURN OFF TRACTOR-SWEEPER
* 1 MAN OPERATION
OP BEGINS AT BLASTING

1 WITH 50 STEPS GET+MANEUVER PLASTIC AT TRACTOR-SWEEPER AND ADJUST
2 PUSH BUTTON WITH CLIMB AT TRACTOR-SWEEPER
3 PUSH BUTTON AT TRACTOR-SWEEPER WITH CLIMB
4 GET+POSITION PLASTIC FROM BLASTING TO TRACTOR-SWEEPER
5 MANIPULATE PLASTIC AT TRACTOR-SWEEPER

752. (CLEAN UP) GRIT IN BLASTING BOOTH WITH TRACTOR-SWEEPER AT BLASTING AREA
PER 1 OPS: 1 11-AUG-83
MUST USE WITH STARTING TRACTOR-SWEEPER SUB-OP
* MULTIPLY BY NUMBER OF FREQUENCIES
* 1 MAN OPERATION
OP BEGINS AT BLASTING

1 PUSH SWITCH AT TRACTOR-SWEEPER (ENGAGE SWEEPER)
2 PULL LEVER AT TRACTOR-SWEEPER (LOWER BRUSH)
3 PUSH CLUTCH-PEDAL WITH FOOT AT TRACTOR-SWEEPER
4 PULL LEVER AT TRACTOR-SWEEPER (LOW GEAR)
5 PULL CLUTCH-PEDAL WITH FOOT AT TRACTOR-SWEEPER FT 30 S
6 PUSH CLUTCH-PEDAL WITH FOOT AT TRACTOR-SWEEPER
7 PULL LEVER AT TRACTOR-SWEEPER (REVERSE GEAR)
8 PULL LEVER AT TRACTOR-SWEEPER (RAISE BRUSH)
9 PULL CLUTCH-PEDAL WITH FOOT AT TRACTOR-SWEEPER FT 20 S

753. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BOBCAT FRONT END LOADER AT BLASTING AREA
PER 1 OPG: 1 11-AUG-83
STARTING BOBCAT AND TURN OFF
* 1 MAN OPERATION
OP BEGINS AT BLASTING

1 WITH 50 STEPS GET+MANEUVER PLASTIC AT BOBCAT AND ADJUST
2 PULL LEVER WITH CLIMB AT BOBCAT
3 PULL LEVER AT BOBCAT WITH CLIMB
4 GET+POSITION PLASTIC FROM BLASTING TO BOBCAT
5 MANIPULATE PLASTIC AT BOBCAT

754. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BOBCAT AT BLASTING AREA
PER 1 OPG: 1 11-AUG-83
USE WITH STARTING BOBCAT SUB-OP
* AD PROCESS TIME
* 1 MAN OPERATION
OP BEGINS AT BLASTING

1 OPERATE BOBCAT AT BLASTING FT 120 S FF 15 (5)

755. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BROOM AT BLASTING AREA
PER 1 OPG: 1 10-AUG-83
* PARTIAL CLEAN-UP FOR MATERIAL HANDLING
OP BEGINS AT BLASTING

1 PUSH BUTTON AT POWER (RAISE DOOR)
2 MOVE BROOM TO OP
3 HOLD+PLACE BROOM FROM OP TO B-DOOR
4 HOLD+MANEUVER BROOM AT B-DOOR FT 120 S FF 2 (5)
5 PLACE BROOM FROM B-DOOR TO POWER AND ASIDE BROOM

758. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BROOM AT BLASTING AREA
PER 1 OPS: 1 10-AUG-83
* USE FOR TRACTOR-SWEEPER SUB-OP
* 2 MAN OPERATION
OP BEGINS AT BLASTING

1 PUSH BUTTON AT POWER (RAISE DOOR)
2 MOVE BROOM TO OP
3 HOLD+PLACE BROOM FROM OP TO B-DOOR
4 HOLD+MANEUVER BROOM AT B-DOOR PT 120 S PF 10 (5)
5 PLACE BROOM FROM B-DOOR TO POWER AND ASIDE BROOM

757. (BLAST) (OBJECT) IN BLAST BOOTH AT BLASTING AREA
PER 1 OPS: 1 11-AUG-83
* MULTIPLY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OP BEGINS AT BLASTING

1 GET+MANEUVER BLAST-HOSE AT BLASTING
2 WITH 10 STEPS MOVE BLAST-HOSE FROM BLASTING TO BLASTING
3 HOLD+OPERATE BLAST-HOSE AT BLASTING

756. (BLAST) (OBJECT) IN BLAST BOOTH AT BLASTING AREA
PER 1 OPS: 1 11-AUG-83
* MULTIPLY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OP BEGINS AT BLASTING

1 GET+MANEUVER WTIH KNEEL BLAST-HOSE AT BLASTING
2 MOVE BLAST-HOSE FROM BLASTING TO BLASTING
3 HOLD+OPERATE BLAST-HOSE AT BLASTING

759. (BLAST) (OBJECT) IN BLAST BOOTH AT BLASTING AREA
PER 1 OPG: 1 11-AUG-83
* MULTIPLY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OP BEGINS AT BLASTING

1 GET+MANEUVER WITH BEND BLAST-HOSE AT BLASTING
2 MOVE BLAST-HOSE FROM BLASTING TO BLASTING
3 HOLD+OPERATE BLAST-HOSE AT BLASTING

761. (MAKE READY) PLACE LINER ON HEAD AT LOCKER
PER 1 OPG: 1 11-AUG-83
OP BEGINS AT LOCKER-AREA

1 GET+POSITION LINER TO OP
2 HOLD+MANIPULATE LINER AT OP AND ADJUST PF 4 (4 5 6)
3 PULL STRAP AT OP AND ADJUST

762. COMBINED SUB-OP

(MAKE READY) OPERATOR FOR BLASTING AT BLAST AREA
CHECK GLASS IN HELMET AND REPLACE IF NECESSARY
PER 1 OPG: 1 12-AUG-83
* USE FOR BLASTING ONLY
* MULTIPLY BY NO. OF OPERATORS

Combined sub-operation elements

741. (MAKE READY) PLACE HELMET ON HEAD AT BLASTING

742. (MAKE READY) PUT COVERALLS ON OPERATOR AT LOCKER-AREA

743. (MAKE READY) TAPE COVERALLS ON OP AT LOCKER

744. (MAKE READY) GLOVES HARDHAT LINER EARPLUGS FOR OP AT BLASTING

745. (MAKE READY) PLACE EAR PLUGS IN EAR AT LOCKER

761. (MAKE READY) PLACE LINER ON HEAD AT LOCKER

691. (MAKE READY) OPERATOR ON GLOVE AT (PAINT-AREA

763. COMBINED SUB-OP

(CLEAN) UP GRIT IN BLAST BOOTH WITH TENANT SWEEPER AT BLASTING AREA
MAKE SURE SWEEPER IS CLEANED OUT BEFORE USING IN BLAST AREA
PER 1 OPG: 1 12-AUG-83
* 2 MAN OPERATION
* 1 MAN IS SIMOED FOR PART OF CLEAN UP

Combined sub-operation elements

747. (CLEANUP) GRIT IN BLASTING BOOTH WITH POWER SWEEPER AT BLASTING AREA

748. (CLEANUP) GRIT IN BLASTING BOOTH WITH BROOM + SHOVEL AT BLASTING AREA

749. (CLEANUP) GRIT IN BLAST BOOTH WITH BOBCAT FRONT END LOADER AT BLAST AREA

750. (CLEANUP) GRIT IN BLASTING BOOTH WITH VACUUM AT BLASTING AREA

764. COMBINED SUB-OP

(CLEAN) UP GRIT IN BLAST BOOTH WITH TRACTOR SWEEPER AT BLAST AREA
PER 1 OPG: 1 12-AUG-83
* 2 MAN OPERATION
* SOME PARTS ARE SIMOED

Combined sub-operation elements

751. (CLEAN UP) GRIT IN BLASTING BOOTH WITH TRACTOR-SWEEPER AT BLASTING

752. (CLEAN UP) GRIT IN BLASTING BOOTH WITH TRACTOR-SWEEPER AT BLASTING AREA

753. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BOBCAT FRONT END LOADER AT BLASTING AREA

754. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BOBCAT AT BLASTING AREA

756. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BROOM AT BLASTING AREA

760. (CHANGE) GLASS ON (HELMET) FOR BLASTING AT BLAST AREA
PER 1 OPG; 1 11-AUG-83
REPLACE WHEN NECESSARY
* 1 MAN OPERATION
OP BEGINS AT BLASTING

1 OPEN CABINET AT BLASTER
2 GET+MOVE GLASS TAPE AT CABINET TO BLASTING
3 GET+MANIPULATE WITH KNEEL TAPE AT HELMET
4 GET+REMOVE TAPE AT HELMET TO OP F 4
5 GET+REMOVE GLASS AT HELMET TO OP
6 GET+POSITION GLASS AT HELMET TO BLASTING F 3
7 GET+MANIPULATE TAPE AT OP F 12
8 HOLD+PULL TAPE AT OP F 12
9 HOLD+POSITION TAPE AT HELMET TO BLASTING F 12
10 TOSS GLASS FROM BLASTING TO BLASTER (IN WASTE BARREL)
11 PLACE TAPE FROM OP TO BLASTER (IN CABINET)

SECTION 7
STANDARD TIME CALCULATION

7.1 WORK SHEETS, TITLE SHEETS, TABLES, CHARTS

BLAST ASSEMBLIES IN BLAST BOOTH

Titlesheet Organization List

Move

761. (MAKE READY) PLACE LINER ON HEAD AT LOCKER

760. (CHANGE) GLASS ON (HELMET) FOR BLASTING AT BLAST AREA
REPLACE WHEN NECESSARY

Prepare

691. (MAKE READY).OPERATOR ON GLOVE AT <PAINT-AREA
GLOVES ARE WORN ONLY DURING PAINTING AND CLEANUP OF PAINTING EQUIPMENT

741. (MAKE READY) PLACE HELMET ON HEAD AT BLASTING
FRESH AIR SUPPLY USED FOR BLASTING

742. (MAKE READY) PUT COVERALLS ON OPERATOR AT LOCKER-AREA
GET READY FOR BLASTING

743. (MAKE READY) TAPE COVERALLS ON OP AT LOCKER
GET READY FOR BLASTING

744. (MAKE READY) GLOVES HARDHAT LINER EARPLUGS FOR OP AT BLASTING

745. (MAKE READY) PLACE EAR PLUGS IN EAR AT LOCKER

746. (TEAR DOWN) OPERATOR FOR BLASTER CLEAN UP AT BLASTING AREA
REMOVE GLOVES HELMET AFTER BLASTING AND TURN OFF BLASTER

747. (CLEANUP) GRIT IN BLASTING BOOTH WITH POWER SWEEPER AT BLASTING AREA
PICKUP GRIT WITH POWER SWEEPER

762. COMBINED SUB-OP

(MAKE READY) OPERATOR FOR BLASTING AT BLAST AREA
CHECK GLASS IN HELMET AND REPLACE IF NECESSARY

763. COMBINED SUB-OP

(CLEAN) UP GRIT IN BLAST BOOTH WITH TENANT SWEEPER AT BLASTING AREA
MAKE SURE SWEEPER IS CLEANED OUT BEFORE USING IN BLAST AREA

764. COMBINED SUB-OP

(CLEAN) UP GRIT IN BLAST BOOTH WITH TRACTOR SWEEPER AT BLAST AREA

Surface Treat

748. (CLEANUP) GRIT IN BLASTING BOOTH WITH BROOM + SHOVEL AT BLASTING AREA
SIMO WHEN USED WITH POWER-SWEEPER

749. (CLEANUP) GRIT IN BLAST BOOTH WITH BOBCAT FRONT END LOADER AT BLAST AREA
SIMO WHEN USED WITH POWER-SWEEPER

750. (CLEANUP) GRIT IN BLASTING BOOTH WITH VACUUM AT BLASTING AREA
USED WTIH POWER SWEEPER

751. (CLEAN UP) GRIT IN BLASTING BOOTH WITH TRACTOR-SWEEPER AT BLASTING
STARTING AND TURN OFF TRACTOR-SWEEPER

752. (CLEAN UP) GRIT IN BLASTING BOOTH WITH TRACTOR-SWEEPER AT BLASTING AR
MUST USE WITH STARTING TRACTOR-SWEEPER SUB-OP

753. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BOBCAT FRONT END LOADER AT BLASTING AREA
STARTING BOBCAT AND TURN OFF

754. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BOBCAT AT BLASTING AREA
USE WITH STARTING BOBCAT SUB-OP

755. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BROOM AT BLASTING AREA

756. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BROOM AT BLASTING AREA

757. (BLAST) (OBJECT) IN BLAST BOOTH AT BLASTING AREA

758. (BLAST) (OBJECT) IN BLAST BOOTH AT BLASTING AREA

759. (BLAST) (OBJECT) IN BLAST BOOTH AT BLASTING AREA

7.2 HOW TO CALCULATE TIME STANDARDS

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	XX	REV. LTR/DATE	6/30/83
PROCESS/OPER CODE	XX	STANDARD CODE	XX
PART NAME	SUPPLY DEPT. ISSUE ROOM		
SHIP CLASS	ARS	HULL	50
COST CLASS/JOB #	XX	TRADE	BLASTERS
GROUP (UNIT/ZONE)	XX	WORK AREA	BLAST BOOTH
SUB-GROUP	XX	WORK ZONE	BLAST BOOTH
SUB-SUB-GROUP	XX	WORK CENTER	XX
CREW/MACHINE	XX	ASSET/MACHINE	XX
ITEM	XX	SUB-ITEM	XX
GEN. DRAWING	XX	WORK ORDER	XX
DET. DRAWING	XX	SHEET	XX
WORK PACKAGE	XX	APPLICATOR	BK
OPER. DESCRIPTION	STRIP BLAST SUPPLY DEPT. ISSUE ROOM		
DATE	12-AUG-83	ISSUE #	1

Step	Method Instruction		Freq
1	(MAKE READY) OPERATOR FOR BLASTING	(762)	.4
	* USE FOR BLASTING ONLY		
	* MULTIPLY BY NO. OF OPERATORS		
2	(CHANGE) GLASS ON (HELMET) FOR BLASTING	(760)	.13
	* 1 MAN OPERATION		
3	(BLAST) (OBJECT) IN BLAST BOOTH	(737)	1?
	* MULTIPLY NO. OF FREQUENCIES		

	* CAN BE 1 OR 2 MAN OPERATION		
4	(BLAST) (OBJECT) IN BLAST BOOTH	(738)	1.2
	* MULTIPLY NO. OF FREQUENCIES		
	* CAN BE 1 OR 2 MAN OPERATION		
5	(BLAST) (OBJECT) IN BLAST BOOTH	(739)	18
	* MULTIPLY NO. OF FREQUENCIES		
	* CAN BE 1 OR 2 MAN OPERATION		
6	(MAKE READY) PLACE EAR PLUGS IN EAR	(743)	3
7	(MAKE READY) PLACE HELMET ON HEAD	(741)	3
8	(MAKE READY) OPERATOR ON GLOVE	(691)	3
9	(CLEAN UP) GRIT IN BLASTING BOOTH WITH BROOM	(755)	1
	* PARTIAL CLEAN-UP FOR MATERIAL HANDLING		
10	(CLEAN) UP GRIT IN BLAST BOOTH WITH TRACTOR SWE	(764)	.4
	EPER		
	* 2 MAN OPERATION		
	* SOME PARTS ARE SINGED		
11	BLASTING	(MACH)	1
12	BLOW OFF GRIT	(MACH)	1
13	(TEAR DOWN) OPERATOR FOR BLASTER CLEAN UP	(746)	3

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP		SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LEG #
1		0.00	0.40		3332.	732
2		0.00	0.13		611.	750
3		0.00	19.00		7410.	757
4		0.00	1.20		480.	758
5		0.00	18.00		5400.	709
6		0.00	3.00		1390.	743
7		0.00	3.00		5280.	741
8		0.00	3.00		1920.	691
9		0.00	1.00		8660.	755
10		0.00	0.40		33920.	764
11	MACHINE OPERATION	0.00	1.00		202374.	
12	MACHINE OPERATION	0.00	1.00		17000.	
13		0.00	3.00		2760.	746

MANUAL TIME(TMU)	0.	73383.
ACTUAL PROCESS TIME(TMU)	0.	219374.
FACTORED PROCESS TIME(TMU)	0.	
TOTAL INTERNAL TIME(TMU)	0.	

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	0.734		0.000	0.734
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	2.194		0.000	2.194
STANDARD(HRS./CYCLE)	2.928		0.000	2.928
PIECES PER CYCLE	1			
STANDARD HOURS				2.9

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	XX	REV. LTR/DATE	6/30/83
PROCESS/OPER CODE	XX	STANDARD CODE	XX
PART NAME	ROPE STOWAGE BIN		
SHIP CLASS	ARS	HULL	50
COST CLASS/JOB #	XX	TRADE	BLASTERS
GROUP (UNIT/ZONE)	XX	WORK AREA	BLAST BOOTH
SUB-GROUP	XX	WORK ZONE	BLAST BOOTH
SUB-SUB-GROUP	XX	WORK CENTER	XX
CREW/MACHINE	X	ASSET/MACHINE	XX
ITEM	XX	SUB-ITEM	XX
GEN. DRAWING	XX	WORK ORDER	XX
DET. DRAWING	XX	SHEET	XX
WORK PACKAGE	XX	APPLICATOR	BK
OPER. DESCRIPTION	STRIP BLAST ROPE STOWAGE BIN		
DATE	12-AUG-83	ISSUE #	1

Step	Method Instruction		Freq
1	(MAKE READY) OPERATOR FOR BLASTING	(762)	.1
	* USE FOR BLASTING ONLY		
	* MULTIPLY BY NO. OF OPERATORS		
2	(CHANGE) GLASS ON (HELMET) FOR BLASTING	(760)	.02
	* 1 MAN OPERATION		
3	(BLAST) (OBJECT) IN BLAST BOOTH	(757)	3
	* MULTIPLY NO. OF FREQUENCIES		
	* CAN BE 1 OR 2 MAN OPERATION		
4	(BLAST) (OBJECT) IN BLAST BOOTH	(756)	.2

	* MULTIPLY NO. OF FREQUENCIES		
	* CAN BE 1 OR 2 MAN OPERATION		
5	(BLAST) (OBJECT) IN BLAST BOOTH	(739)	3
	* MULTIPLY NO. OF FREQUENCIES		
	* CAN BE 1 OR 2 MAN OPERATION		
6	(MAKE READY) PLACE EAR PLUGS IN EAR	(748)	.3
7	(MAKE READY) PLACE HELMET ON HEAD	(741)	.2
8	(MAKE READY) OPERATOR ON GLOVE	(691)	.3
9	(CLEAN UP) GRIT IN BLASTING BOOTH WITH BROOM	(755)	.14
	* PARTIAL CLEAN-UP FOR MATERIAL HANDLING		
10	(CLEAN) UP GRIT IN BLAST BOOTH WITH TRACTOR SWE	(764)	.1
	EPER		
	* 2 MAN OPERATION		
	* SOME PARTS ARE SIMOED		
11	BLASTING	(MACH)	1
12	BLOW OFF GRIT	(MACH)	1
13	(TEAR DOWN) OPERATOR FOR BLASTER CLEAN UP	(746)	.6

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP		SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1		0.00	0.10		833.	762
2		0.00	0.02		94.	760
3		0.00	3.00		1170.	757
4		0.00	0.20		80.	758
5		0.00	3.00		900.	759
6		0.00	0.50		265.	745
7		0.00	0.50		880.	741
8		0.00	0.50		320.	691
9		0.00	0.14		1215.	755
10		0.00	0.10		8980.	764
11	MACHINE OPERATION	0.00	1.00		35724.	
12	MACHINE OPERATION	0.00	1.00		3000.	
13		0.00	0.60		552.	746
				---	---	
	MANUAL TIME(TMU)			0.	88672.	
	ACTUAL PROCESS TIME(TMU)			0.	253098.	
	FACTORED PROCESS TIME(TMU)			0.		
	TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	0.153		0.000	0.153
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.387		0.000	0.387
STANDARD(HRS./CYCLE)	0.540		0.000	0.540
PIECES PER CYCLE	1			
STANDARD HOURS				0.5

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	XXX	REV. LTR/DATE	6/30/83
PROCESS/OPER CODE	XX	STANDARD CODE	XX
PART NAME	SUPPLY DEPT. OFFICE		
SHIP CLASS	ARS	HULL	50
COST CLASS/JOB #	XX	TRADE	BLASTERS
GROUP (UNIT/ZONE)	XX	WORK AREA	BLAST BLDG
SUB-GROUP	XX	WORK ZONE	BLAST BLDG
SUB-SUB-GROUP	XX	WORK CENTER	XX
CREW/MACHINE	XX	ASSET/MACHINE	XX
ITEM	XX	SUB-ITEM	XX
GEN. DRAWING	XX	WORK ORDER	XX
DET. DRAWING	XX	SHEET	XX
WORK PACKAGE	XX	APPLICATOR	DK
OPER. DESCRIPTION	STRIP BLAST SUPPLY DEPT. OFFICE		
DATE	12-AUG-83	ISSUE #	1

Step	Method Instruction		Freq
1	(MAKE READY) OPERATOR FOR BLASTING * USE FOR BLASTING ONLY * MULTIPLY BY NO. OF OPERATORS	(762)	.2
2	(CHANGE) GLASS ON (HELMET) FOR BLASTING * 1 MAN OPERATION	(760)	.1
3	(BLAST) (OBJECT) IN BLAST BOOTH * MULTIPLY NO. OF FREQUENCIES * CAN BE 1 OR 2 MAN OPERATION	(757)	10
4	(BLAST) (OBJECT) IN BLAST BOOTH	(756)	.63

	* MULTIPLY NO. OF FREQUENCIES		
	* CAN BE 1 OR 2 MAN OPERATION		
5	(BLAST) (OBJECT) IN BLAST BOOTH	(739)	9
	* MULTIPLY NO. OF FREQUENCIES		
	* CAN BE 1 OR 2 MAN OPERATION		
6	(MAKE READY) PLACE EAR PLUGS IN EAR	(743)	1.3
7	(MAKE READY) PLACE HELMET ON HEAD	(741)	1.3
8	(MAKE READY) OPERATOR ON GLOVE	(691)	1.3
9	(CLEAN UP) GRIT IN BLASTING BOOTH WITH BROOM	(755)	.42
	* PARTIAL CLEAN-UP FOR MATERIAL HANDLING		
10	(CLEAN) UP GRIT IN BLAST BOOTH WITH TRACTOR SWE	(764)	.21
	EPER		
	* 2 MAN OPERATION		
	* SOME PARTS ARE SIMOED		
11	BLASTING	(MACH)	1
12	BLOW OFF GRIT	(MACH)	1
13	(TEAR DOWN) OPERATOR FOR BLASTER CLEAN UP	(746)	1.7

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP		SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC
1		0.00	0.20		1846.	762
2		0.00	0.10		470.	760
3		0.00	10.00		3900.	757
4		0.00	0.63		252.	758
5		0.00	9.00		2700.	759
6		0.00	1.50		795.	745
7		0.00	1.50		2640.	741
8		0.00	1.50		960.	691
9		0.00	0.42		3646.	755
10		0.00	0.21		18858.	764
11	MACHINE OPERATION	0.00	1.00		107138.	
12	MACHINE OPERATION	0.00	1.00		9000.	
13		0.00	1.70		1564.	746

MANUAL TIME(TMU)	0.	126123.
ACTUAL PROCESS TIME(TMU)	0.	374286.
FACTORED PROCESS TIME(TMU)	0.	
TOTAL INTERNAL TIME(TMU)	0.	

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	0.375		0.000	0.375
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	1.162		0.000	1.162
STANDARD(HRS./CYCLE)	1.336		0.000	1.336
PIECES PER CYCLE	1			
STANDARD HOURS				1.3

SECTION 8
DATA SYNTHESIS AND BACK-UP

8.1 SUMMARY

686. TAPE (MAKE READY) SECTION FOR PAINTING WITH MASKING TAPE AT PAINTING AREA
PER 1 OPG: 1 27-APR-83
MASK AREA NOT TO BE PAINTED. MULTIPLY BY THE NO OF EDGES,BULKHEAD LINES,STIFFENER LINES,STIFFENERS,ETC.
* AVERAGE 4' LENGTH OF TAPE APPLIED
OP BEGINS AT PAINT-AREA

TOTAL TMU 1920.

691. (MAKE READY) OPERATOR ON GLOVE AT PAINT-AREA
PER 1 OPG: 1 13-APR-83
GLOVES ARE WORN ONLY DURING PAINTING AND CLEANUP OF PAINTING EQUIPMENT
OP BEGINS AT PAINT-AREA

TOTAL TMU 640.

741. (MAKE READY) PLACE HELMET ON HEAD AT BLASTING
PER 1 OPG: 1 10-AUG-83
FRESH AIR SUPPLY USED FOR BLASTING
OP BEGINS AT BLASTING

TOTAL TMU 1760.

742. (MAKE READY) PUT COVERALLS ON OPERATOR AT LOCKER-AREA
PER 1 OPG: 1 11-AUG-83
GET READY FOR BLASTING
OP BEGINS AT BLASTING

TOTAL TMU 2070.

743. (MAKE READY) TAPE COVERALLS ON OP AT LOCKER
PER 1 OFG: 1 11-AUG-83
GET READY FOR BLASTING
OP BEGINS AT LOCKER-AREA

TOTAL TMU 680.

744. (MAKE READY) GLOVES HARDHAT LINER EARPLUGS FOR OP AT BLASTING
PER 1 OFG: 1 11-AUG-83
OP BEGINS AT LOCKER-AREA

TOTAL TMU 1610.

745. (MAKE READY) PLACE EAR PLUGS IN EAR AT LOCKER
PER 1 OFG: 1 11-AUG-83
OP BEGINS AT LOCKER-AREA

TOTAL TMU 330.

746. (TEAR DOWN) OPERATOR FOR BLASTER CLEAN UP AT BLASTING AREA
PER 1 OFG: 1 11-AUG-83
REMOVE GLOVES HELMET AFTER BLASTING AND TURN OFF BLASTER
OP BEGINS AT BLASTING

TOTAL TMU 920.

747. (CLEANUP) GRIT IN BLASTING BOOTH WITH POWER SWEEPER AT BLASTING AREA
PER 1 OFG: 1 11-AUG-83
PICKUP GRIT WITH POWER SWEEPER
* AD 2ND OPERATOR CLEANUP
OP BEGINS AT BLASTING

TOTAL TMU 51140.

748. (CLEANUP) GRIT IN BLASTING BOOTH WITH BROOM + SHOVEL AT BLASTING AREA
PER 1 OFG: 1 11-AUG-83
SIMO WHEN USED WITH POWER-SWEEPER
OP BEGINS AT BLASTING

TOTAL TMU 11630.

749. (CLEANUP) GRIT IN BLAST BOOTH WITH BOBCAT FRONT END LOADER AT BLAST AREA
PER 1 OFG: 1 11-AUG-83
SIMO WHEN USED WITH POWER-SWEEPER
OP BEGINS AT B-DOOR

TOTAL TMU 6790.

750. (CLEANUP) GRIT IN BLASTING BOOTH WITH VACUUM AT BLASTING AREA
PER 1 OFG: 1 11-AUG-83
USED WTIH POWER SWEEPER
OP BEGINS AT RECOVERY-AREA

TOTAL TMU 2750.

751. (CLEAN UP) GRIT IN BLASTING BOOTH WITH TRACTOR-SWEEPER AT BLASTING
PER 1 OFG: 1 11-AUG-83
STARTING AND TURN OFF TRACTOR-SWEEPER
* 1 MAN OPERATION
OP BEGINS AT BLASTING

TOTAL TMU 1760.

752. (CLEAN UP) GRIT IN BLASTING BOOTH WITH TRACTOR-SWEEPER AT BLASTING AR
PER 1 OPG: 1 11-AUG-83
MUST USE WITH STARTING TRACTOR-SWEEPER SUB-OP
* MULTIPLY BY NUMBER OF FREQUENCIES
* 1 MAN OPERATION
OP BEGINS AT BLASTING

TOTAL TMU 1620.

753. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BOBCAT FRONT END LOADER AT BLASTING AREA
PER 1 OPG: 1 11-AUG-83
STARTING BOBCAT AND TURN OFF
* 1 MAN OPERATION
OP BEGINS AT BLASTING

TOTAL TMU 1760.

754. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BOBCAT AT BLASTING AREA
PER 1 OPG: 1 11-AUG-83
USE WITH STARTING BOBCAT SUB-OP
* AD PROCESS TIME
* 1 MAN OPERATION
OP BEGINS AT BLASTING

TOTAL TMU 49580.

755. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BROOM AT BLASTING AREA
PER 1 OPG: 1 10-AUG-83
* PARTIAL CLEAN-UP FOR MATERIAL HANDLING
OP BEGINS AT BLASTING

TOTAL TMU 8680.

756. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BROOM AT BLASTING AREA
PER 1 OPG: 1 10-AUG-83
* USE FOR TRACTOR-SWEEPER SUB-OP
* 2 MAN OPERATION
OP BEGINS AT BLASTING

TOTAL TMU 25080.

757. (BLAST) (OBJECT) IN BLAST BOOTH AT BLASTING AREA
PER 1 OPG: 1 11-AUG-83
* MULTIPLY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OP BEGINS AT BLASTING

TOTAL TMU 390.

758. (BLAST) (OBJECT) IN BLAST BOOTH AT BLASTING AREA
PER 1 OPG: 1 11-AUG-83
* MULTIPLY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OP BEGINS AT BLASTING

TOTAL TMU 400.

759. (BLAST) (OBJECT) IN BLAST BOOTH AT BLASTING AREA
PER 1 OPG: 1 11-AUG-83
* MULTIPLY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OP BEGINS AT BLASTING

TOTAL TMU 300.

761. (MAKE READY) PLACE LINER ON HEAD AT LOCKER
PER 1 OPG: 1 11-AUG-83
OP BEGINS AT LOCKER-AREA

TOTAL TMU 840.

762. COMBINED SUB-OP

(MAKE READY) OPERATOR FOR BLASTING AT BLAST AREA
CHECK GLASS IN HELMET AND REPLACE IF NECESSARY
PER 1 OPG: 1 12-AUG-83
* USE FOR BLASTING ONLY
* MULTIPLY BY NO. OF OPERATORS

TOTAL TMU 8330.0

763. COMBINED SUB-OP

(CLEAN) UP GRIT IN BLAST BOOTH WITH TENANT SWEEPER AT BLASTING AREA
MAKE SURE SWEEPER IS CLEANED OUT BEFORE USING IN BLAST AREA
PER 1 OPG: 1 12-AUG-83
* 2 MAN OPERATION
* 1 MAN IS SIMOED FOR PART OF CLEAN UP

TOTAL TMU 72330.0

764. COMBINED SUB-OP

(CLEAN) UP GRIT IN BLAST BOOTH WITH TRACTOR SWEEPER AT BLAST AREA
PER 1 OPG: 1 12-AUG-83
* 2 MAN OPERATION
* SOME PARTS ARE SIMOED

TOTAL TMU 89800.0

760. (CHANGE) GLASS ON (HELMET) FOR BLASTING AT BLAST AREA
PER 1 OPG: 1 11-AUG-83
REPLACE WHEN NECESSARY
* 1 MAN OPERATION
OP BEGINS AT BLASTING

TOTAL TMU 4700.

3.2 SYNTHESIS AND ANALYSIS

686. TAPE (MAKE READY) SECTION FOR PAINTING WITH MASKING TAPE AT PAINTING AREA
PER 1 OPG: 1 27-APR-83
MASK AREA NOT TO BE PAINTED. MULTIPLYBY THE NO OF EDGES,BULKHEAD LINES,STIFFENER LINES,STIFFENERS,ETC.
* AVERAGE 4' LENGTH OF TAPE APPLIED
OP BEGINS AT PAINT-AREA

1	MOVE TAPE FROM TABLE TO OP	A32	B0	G1	A32	B0	P1	A0	1.00	660.
2	GET+MANIPULATE TAPE FROM OP TO OP	A1	B0	G3	M10	X0	I0	A1	1.00	150.
3	POSITION TAPE FROM OP TO SECTION	A1	B0	G1	A1	B0	P6	A0	1.00	90.
4	TURN WALK 3 STEPS TAPE AT SECTION AND ALIGN F 3	A6	B0	G1	M3	X0	I10	A0	3.00	600.
5	PRESS WALK 3 STEPS TAPE AT SECTION F 3	A6	B0	G1	M3	X0	I0	A0	3.00	300.
6	MANIPULATE TAPE AT SECTION	A1	B0	G1	M10	X0	I0	A0	1.00	120.

TOTAL TMU 1920.

691. (MAKE READY) OPERATOR ON GLOVE AT (PAINT-AREA
PER 1 OPG: 1 13-APR-83
GLOVES ARE WORN ONLY DURING PAINTING AND CLEANUP OF PAINTING EQUIPMENT
OP BEGINS AT PAINT-AREA

1	WALK TO P-CLEANING	A32	B0	G0	A0	B0	P0	A0	1.00	320.
2	REMOVE GLOVE FROM P-CLEANING TO OP F 2	A1	B0	G1	A1	B0	P1	A0	2.00	80.
3	MANIPULATE GLOVE AT OP F 2	A1	B0	G1	M10	X0	I0	A0	2.00	240.

TOTAL TMU 640.

741. (MAKE READY) PLACE HELMET ON HEAD AT BLASTING
PER 1 OPG: 1 10-AUG-83
FRESH AIR SUPPLY USED FOR BLASTING
OP BEGINS AT BLASTING

1 GET+MOVE HELMET TO BLASTING WITH 20 STEPS A1 B0 G3 A32 B0 P1 A0		1.00	370.
2 PUSH BUTTON AT BLASTER A32 B0 G1 M1 X0 I0 A0		1.00	340.
3 PUSH BUTTON AT RECOVERY-AREA A16 B0 G1 M1 X0 I0 A0		1.00	180.
4 PLACE HELMET WITH BEND TO BLASTING A42 B6 G1 A1 B0 P3 A0		1.00	530.
5 HOLD+POSITION HELMET TO OP A0 B0 G0 A1 B0 P6 A0		1.00	70.
6 MANIPULATE HELMET AT OP (PUT HELMET ON) A1 B0 G1 M10 X0 I0 A0		1.00	120.
7 PULL CAPE AT OP AND ADJUST PF 2 (6) A1 B0 G1 M1 X0 (I6)A0	(2)	1.00	150.
	TOTAL TMU		1760.

742. (MAKE,READY) PUT COVERALLS ON OPERATOR AT LOCKER-AREA
PER 1 OPG: 1 11-AUG-83
GET READY FOR BLASTING
OP BEGINS AT BLASTING

1 OPEN LOCKER AT LOCKER-AREA A131B0 G1 M3 X0 I0 A0		1.00	1350.
2 GET+PLACE WITH BEND COVERALLS FROM LOCKER TO OP A1 B6 G3 A1 B0 P3 A0		1.00	140.
3 HOLD+MANIPULATE COVERALLS AT OP (PUT ON LEGS) F 2 A0 B0 G0 M10 X0 I0 A0		2.00	200.
4 PULL COVERALLS AT OP AND ADJUST A1 B0 G1 M1 X0 I6 A0		1.00	90.
5 HOLD+HANDLE COVERALLS AT OP AND ADJUST (PUT ON ARMS) F 2 A0 B0 G0 M6 X0 I6 A0		2.00	240.
6 GET+PULL ZIPPER AT OP A1 B0 G3 M1 X0 I0 A0		1.00	50.
	TOTAL TMU		2070.

743. (MAKE READY) TAPE COVERALLS ON OP AT LOCKER
PER 1 OFG: 1 11-AUG-83
GET READY FOR BLASTING
OP BEGINS AT LOCKER-AREA

1	GET+MOVE TAPE FROM LOCKER TO OP	A1	B0	G3	A1	B0	P1	A0	1.00	60.
2	GET+PULL TAPE WITH BEND AT OP F 2	A1	B6	G3	M1	X0	I0	A0	2.00	220.
3	HOLD+POSITION TAPE FROM OP TO COVERALLS F 2	A0	B0	G0	A1	B0	P6	A0	2.00	140.
4	HOLD+TURN TAPE AT COVERALLS F 6	A0	B0	G0	M3	X0	I0	A0	6.00	180.
5	HOLD+PULL TAPE AT OP F 2	A0	B0	G0	M1	X0	I0	A0	2.00	20.
6	PLACE TAPE FROM OP TO LOCKER	A1	B0	G1	A1	B0	P3	A0	1.00	60.

TOTAL TMU 680.

744. (MAKE READY) GLOVES HARDHAT LINER EARPLUGS FOR OP AT BLASTING
PER 1 OFG: 1 11-AUG-83
OP BEGINS AT LOCKER-AREA

1	MOVE GLOVES FROM LOCKER TO OP	A1	B0	G1	A1	B0	P1	A0	1.00	40.
2	MOVE HARDHAT FROM LOCKER TO OP	A1	B0	G1	A1	B0	P1	A0	1.00	40.
3	MOVE LINER EARPLUGS FROM LOCKER TO OP	A1	B0	G1	A1	B0	P1	A0	1.00	40.
4	HOLD+POSITION GLOVES HARDHAT LINER EARPLUGS FROM OP TO BLASTING WITH DOOR PF 2 (5)	A0	B0	G0	A131(B16)P6			A0 (2)	1.00	1690.

TOTAL TMU 1810.

745. (MAKE READY) PLACE EAR PLUGS IN EAR AT LOCKER
PER 1 OPG: 1 11-AUG-83
OP BEGINS AT LOCKER-AREA

1	PLACE EARPLUGS TO OP	A1	B0	G1	A1	B0	P3	A0	1.00	60.
2	OPEN BOX AT LOCKER	A1	B0	G1	M3	X0	I0	A0	1.00	50.
3	GET+MANIPULATE EARPLUGS AT OP F 2	A1	B0	G3	M10	X0	I0	A0	2.00	280.
4	HOLD+POSITION EARPLUGS FROM OP TO OP F 2	A0	B0	G0	A1	B0	P6	A0	2.00	140.

TOTAL TMU 530.

746. (TEAR DOWN) OPERATOR FOR BLASTER CLEAN UP AT BLASTING AREA
PER 1 OPG: 1 11-AUG-83
REMOVE GLOVES HELMET AFTER BLASTING AND TURN OFF BLASTER
OP BEGINS AT BLASTING

1	GET+REMOVE WOODEN-WEDGE FROM B-N-SWITCH TO BLASTING WITH BEND	A1	B0	G3	A1	B6	P1	A0	1.00	120.
2	GET+REPOSITION GLOVE FROM OP TO BLASTING F 2	A1	B0	G3	A1	B0	P6	A0	2.00	220.
3	GET+MANIPULATE CAPE HELMET AT OP	A1	B0	G3	M10	X0	I0	A0	1.00	140.
4	HOLD+REPLACE CAPE HELMET FROM OP TO BLASTING WITH BEND	A0	B0	G0	A1	B6	P3	A0	1.00	100.
5	PUSH BUTTON AT BLASTER (SHUT OFF BLASTER)	A32	B0	G1	M1	X0	I0	A0	1.00	340.

TOTAL TMU 920.

747, (CLEANUP) GRIT IN BLASTING BOOTH WITH POWER SWEEPER AT BLASTING AREA
PER 1 OPS: 1 11-AUG-83
PICKUP GRIT WITH POWER SWEEPER
* AD 2ND OPERATOR CLEANUP
OP BEGINS AT BLASTING

1	PUSH BUTTON AT VACUUM	A32	B0	G1	M1	X0	I0	A0	1.00	340.
2	PUSH BUTTON AT POWER WITH DOOR (RAISE B-DOOR)	A24	B16	G1	M1	X0	I0	A0	1.00	420.
3	WALK 50 STEPS TO B-DOOR	A32	B0	G0	A0	B0	P0	A0	1.00	320.
4	CLIMB PUSH BUTTON AT POWER-SWEEPER	A1	B16	G1	M1	X0	I0	A0	1.00	190.
5	MOVE POWER-SWEEPER TO BLASTING	A1	B0	G1	A42	B0	P1	A0	1.00	450.
6	OPERATE POWER-SWEEPER AT BLASTING PT 120 S F 14	A1	B0	G1	M6	X330I0		A0	14.00	47320.
7	PUSH BUTTON AT POWER-SWEEPER WITH CLIMB	A1	B16	G1	M1	X0	I0	A0	1.00	190.
8	PUSH BUTTON AT VACUUM	A32	B0	G1	M1	X0	I0	A0	1.00	340.
9	PUSH BUTTON AT RECOVERY-AREA AND RETURN AT PAINT-AREA	A42	B0	G1	M1	X0	I0	A113	1.00	1570.

TOTAL TMU 51140.

748. (CLEANUP) GRIT IN BLASTING BOOTH WITH BROOM + SHOVEL AT BLASTING AREA
PER 1 OFG: 1 11-AUG-83
SIMO WHEN USED WITH POWER-SWEEPER
OP BEGINS AT BLASTING

1 GET+MOVE BROOM FROM B-DOOR TO OP	A42 B0 G3 A42 B0 P1 A0		1.00	880.
2 HOLD+MANEUVER BROOM AT OP PT 60 S PF 4 (5)	A0 B0 G0 M10 (X173)I0 A0	(4)	1.00	7020.
3 GET+PICKUP WITH BEND BLAST-HOSE FROM BLASTING TO OP F 2	A1 B6 G3 A1 B0 P0 A0		2.00	220.
4 HOLD+POSITION BLAST-HOSE FROM OP TO WALLRACK F 2	A0 B0 G0 A42 B0 P6 A0		2.00	960.
5 GET+CRANK BLAST-HOSE 20 REVS AT WALLRACK	A1 B0 G3 M32 X0 I0 A0		1.00	360.
6 GET+MOVE WITH BEND HELMET FROM BLASTING TO RECOVERY-AREA	A42 B6 G3 A42 B0 P1 A0		1.00	940.
7 GET+CRANK AIRHOSE 20 REVS AT WALLRACK	A1 B0 G3 M32 X0 I0 A0		1.00	360.
8 HOLD+POSITION HELMET AIRHOSE TO WALLRACK	A0 B0 G0 A1 B0 P6 A0		1.00	70.
9 GET+MANEUVER SHOVEL AT RECOVERY-AREA PF 8 (4)	A1 B0 G3 (M10)X0 I0 A0	(8)	1.00	840.
		TOTAL TMU		11650.

749. (CLEANUP) GRIT IN BLAST BOOTH WITH BOBCAT FRONT END LOADER AT BLAST AREA
PER 1 OFG: 1 11-AUG-83
SIMO WHEN USED WITH POWER-SWEEPER
OP BEGINS AT B-DOOR

1 CLIMB PUSH BUTTON AT BOBCAT	A42 B16 G1 M1 X0 I0 A0		1.00	600.
2 OPERATE BOBCAT AT BLASTING PT 15 S F 12	A1 B0 G1 M6 X42 I0 A0		12.00	6000.
3 PUSH BUTTON AT BOBCAT WITH CLIMB	A1 B16 G1 M1 X0 I0 A0		1.00	190.
		TOTAL TMU		6790.

750. (CLEANUP) GRIT IN BLASTING BOOTH WITH VACUUM AT BLASTING AREA
PER 1 OFG: 1 11-AUG-83
USED WTIH POWER SWEEPER
OP BEGINS AT RECOVERY-AREA

1	GET+PLACE WITH BEND VACUUM-HOSE FROM BLASTING TO GRIT								
		A42	B6	G3	A1	B0	P3	A0	1.00	550.
2	GET+HOLD WITH BEND VACUUM-HOSE TO GRIT F 12								
		A1	B6	G3	A1	B0	P0	A0	12.00	1320.
3	GET+PICKUP WITH BEND VACUUM-HOSE TO GRIT (AFTER BOBCAT CLEANUP) F 8								
		A1	B6	G3	A1	B0	P0	A0	8.00	880.
								TOTAL TMU		2750.

751. (CLEAN UP) GRIT IN BLASTING BOOTH WITH TRACTOR-SWEEPER AT BLASTING
PER 1 OFG: 1 11-AUG-83
STARTING AND TURN OFF TRACTOR-SWEEPER
* 1 MAN OPERATION
OP BEGINS AT BLASTING

1	WITH 50 STEPS GET+MANEUVER PLASTIC AT TRACTOR-SWEEPER AND ADJUST								
		A96	B0	G3	M10	X0	I6	A0	1.00	1150.
2	PUSH BUTTON WITH CLIMB AT TRACTOR-SWEEPER								
		A1	B16	G1	M1	X0	I0	A0	1.00	190.
3	PUSH BUTTON AT TRACTOR-SWEEPER WITH CLIMB								
		A1	B16	G1	M1	X0	I0	A0	1.00	190.
4	GET+POSITION PLASTIC FROM BLASTING TO TRACTOR-SWEEPER								
		A1	B0	G3	A1	B0	P6	A0	1.00	110.
5	MANIPULATE PLASTIC AT TRACTOR-SWEEPER								
		A1	B0	G1	M10	X0	I0	A0	1.00	120.
								TOTAL TMU		1760.

752. (CLEAN UP) GRIT IN BLASTING BOOTH WITH TRACTOR-SWEEPER AT BLASTING ARE
PER 1 OPG: 1 11-AUG-83
MUST USE WITH STARTING TRACTOR-SWEEPER SUB-OP
* MULTIPLY BY NUMBER OF FREQUENCIES
* 1 MAN OPERATION
OP BEGINS AT BLASTING

1	PUSH SWITCH AT TRACTOR-SWEEPER (ENGAGE SWEEPER)	A1	B0	G1	M1	X0	I0	A0	1.00	30.
2	PULL LEVER AT TRACTOR-SWEEPER (LOWER BRUSH)	A1	B0	G1	M1	X0	I0	A0	1.00	30.
3	PUSH CLUTCH-PEDAL WITH FOOT AT TRACTOR-SWEEPER	A1	B0	G1	M1	X0	I0	A0	1.00	30.
4	PULL LEVER AT TRACTOR-SWEEPER (LOW GEAR)	A1	B0	G1	M1	X0	I0	A0	1.00	30.
5	PULL CLUTCH-PEDAL WITH FOOT AT TRACTOR-SWEEPER PT 30 S	A1	B0	G1	M1	X81	I0	A0	1.00	840.
6	PUSH CLUTCH-PEDAL WITH FOOT AT TRACTOR-SWEEPER	A1	B0	G1	M1	X0	I0	A0	1.00	30.
7	PULL LEVER AT TRACTOR-SWEEPER (REVERSE GEAR)	A1	B0	G1	M1	X0	I0	A0	1.00	30.
8	PULL LEVER AT TRACTOR-SWEEPER (RAISE BRUSH)	A1	B0	G1	M1	X0	I0	A0	1.00	30.
9	PULL CLUTCH-PEDAL WITH FOOT AT TRACTOR-SWEEPER PT 20 S	A1	B0	G1	M1	X54	I0	A0	1.00	570.

TOTAL TMU 1620.

753. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BOBCAT FRONT END LOADER AT BLASTING AREA
PER 1 OPG: 1 11-AUG-83
STARTING BOBCAT AND TURN OFF
* 1 MAN OPERATION
OP BEGINS AT BLASTING

1	WITH 50 STEPS GET+MANEUVER PLASTIC AT BOBCAT AND ADJUST	A96	B0	G3	M10	X0	I6	A0	1.00	1150.
2	PULL LEVER WITH CLIMB AT BOBCAT	A1	B16	G1	M1	X0	I0	A0	1.00	190.
3	PULL LEVER AT BOBCAT WITH CLIMB	A1	B16	G1	M1	X0	I0	A0	1.00	190.
4	GET+POSITION PLASTIC FROM BLASTING TO BOBCAT	A1	B0	G3	A1	B0	P6	A0	1.00	110.
5	MANIPULATE PLASTIC AT BOBCAT	A1	B0	G1	M10	X0	I0	A0	1.00	120.

TOTAL TMU 1760.

754. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BOBCAT AT BLASTING AREA
PER 1 OPG: 1 11-AUG-83
USE WITH STARTING BOBCAT SUB-OP
* AD PROCESS TIME
* 1 MAN OPERATION
OP BEGINS AT BLASTING

1	OPERATE BOBCAT AT BLASTING PT 120 S PF 15 (5)	A1	B0	G1	M6	(X330)I0	A0	(15)	1.00	49580.

TOTAL TMU 49580.

755. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BROOM AT BLASTING AREA
PER 1 OFG: 1 10-AUG-83
* PARTIAL CLEAN-UP FOR MATERIAL HANDLING
OP BEGINS AT BLASTING

1 PUSH BUTTON AT POWER (RAISE DOOR) A42 B16 G1 M1 X0 I0 A0	1.00	600.
2 MOVE BROOM TO OP A32 B0 G1 A32 B0 P1 A0	1.00	660.
3 HOLD+PLACE BROOM FROM OP TO B-DOOR A0 B0 G0 A32 B0 P3 A0	1.00	350.
4 HOLD+MANEUVER BROOM AT B-DOOR PT 120 S PF 2 (5) A0 B0 G0 M10 (X330)I0 A0 (2)	1.00	6700.
5 PLACE BROOM FROM B-DOOR TO POWER AND ASIDE BROOM A1 B0 G1 A32 B0 P3 A0	1.00	370.
	TOTAL TMU	8680.

756. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BROOM AT BLASTING AREA
PER 1 OFG: 1 10-AUG-83
* USE FOR TRACTOR-SWEEPER SUB-OP
* 2 MAN OPERATION
OP BEGINS AT BLASTING

1 PUSH BUTTON AT POWER (RAISE DOOR) A42 B16 G1 M1 X0 I0 A0	1.00	600.
2 MOVE BROOM TO OP A32 B0 G1 A32 B0 P1 A0	1.00	660.
3 HOLD+PLACE BROOM FROM OP TO B-DOOR A0 B0 G0 A32 B0 P3 A0	1.00	350.
4 HOLD+MANEUVER BROOM AT B-DOOR PT 120 S PF 10 (5) A0 B0 G0 M10 (X330)I0 A0 (10)	1.00	33100.
5 PLACE BROOM FROM B-DOOR TO POWER AND ASIDE BROOM A1 B0 G1 A32 B0 P3 A0	1.00	370.
	TOTAL TMU	35080.

757. (BLAST) (OBJECT) IN BLAST BOOTH AT BLASTING AREA
PER 1 OFO: 1 11-AUG-83
* MULTIPLY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OF BEGINS AT BLASTING

1	GET+MANEUVER BLAST-HOSE AT BLASTING	A1	B0	G3	M10	X0	I0	A0	1.00	140.
2	WITH 10 STEPS MOVE BLAST-HOSE FROM BLASTING TO BLASTING	A16	B0	G1	A1	B0	P1	A0	1.00	190.
3	HOLD+OPERATE BLAST-HOSE AT BLASTING	A0	B0	G0	M6	X0	I0	A0	1.00	60.

TOTAL TMU 390.

758. (BLAST) (OBJECT) IN BLAST BOOTH AT BLASTING AREA
PER 1 OFO: 1 11-AUG-83
* MULTIPLY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OF BEGINS AT BLASTING

1	GET+MANEUVER WTIH KNEEL BLAST-HOSE AT BLASTING	A1	B16	G3	M10	X0	I0	A0	1.00	300.
2	MOVE BLAST-HOSE FROM BLASTING TO BLASTING	A1	B0	G1	A1	B0	P1	A0	1.00	40.
3	HOLD+OPERATE BLAST-HOSE AT BLASTING	A0	B0	G0	M6	X0	I0	A0	1.00	60.

TOTAL TMU 400.

759. (BLAST) (OBJECT) IN BLAST BOOTH AT BLASTING AREA
PER 1 OPG: 1 11-AUG-83
* MULTIPLY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OP BEGINS AT BLASTING

1 GET+MANEUVER WITH BEND BLAST-HOSE AT BLASTING A1 B6 G3 M10 X0 I0 A0	1.00	200.
2 MOVE BLAST-HOSE FROM BLASTING TO BLASTING A1 B0 G1 A1 B0 P1 A0	1.00	40.
3 HOLD+OPERATE BLAST-HOSE AT BLASTING A0 B0 G0 M6 X0 I0 A0	1.00	60.
	TOTAL TMU	300.

761. (MAKE READY) PLACE LINER ON HEAD AT LOCKER
PER 1 OPG: 1 11-AUG-83
OP BEGINS AT LOCKER-AREA

1 GET+POSITION LINER TO OP A1 B0 G3 A1 B0 P6 A0	1.00	110.
2 HOLD+MANIPULATE LINER AT OP AND ADJUST PF 4 (4 5 6) A0 B0 G0 (M10 X0 I6)A0 (4)	1.00	540.
3 PULL STRAP AT OP AND ADJUST A1 B0 G1 M1 X0 I6 A0	1.00	90.
	TOTAL TMU	840.

762. COMBINED SUB-OP

(MAKE READY) OPERATOR FOR BLASTING AT BLAST AREA
CHECK GLASS IN HELMET AND REPLACE IF NECESSARY
PER 1 OPS: 1 12-AUG-83
* USE FOR BLASTING ONLY
* MULTIPLY BY NO. OF OPERATORS

TOTAL TMU 8330.0

Combined sub-operation elements	Freq.	TMU
741. (MAKE READY) PLACE HELMET ON HEAD AT BLASTING	1.00	1760.0
742. (MAKE READY) PUT COVERALLS ON OPERATOR AT LOCKER-AREA	1.00	2070.0
743. (MAKE READY) TAPE COVERALLS ON OP AT LOCKER	1.00	660.0
744. (MAKE READY) GLOVES HARDHAT LINER EARPLUGS FOR OP AT BLASTING	1.00	1810.0
745. (MAKE READY) PLACE EAR PLUGS IN EAR AT LOCKER	1.00	530.0
761. (MAKE READY) PLACE LINER ON HEAD AT LOCKER	1.00	840.0
691. (MAKE READY) OPERATOR ON GLOVE AT PAINT-AREA	1.00	640.0
Total TMU		8330.0

763. COMBINED SUB-OP

(CLEAN) UP GRIT IN BLAST BOOTH WITH TENANT SWEEPER AT BLASTING AREA
MAKE SURE SWEEPER IS CLEANED OUT BEFORE USING IN BLAST AREA
PER 1 OPG: 1 12-AUG-83
* 2 MAN OPERATION
* 1 MAN IS SIMOED FOR PART OF CLEAN UP

TOTAL TMU 72330.0

Combined sub-operation elements	Freq.	TMU
747. (CLEANUP) GRIT IN BLASTING BOOTH WITH POWER SWEEPER AT BLASTING AREA	1.00	31140.0
748. (CLEANUP) GRIT IN BLASTING BOOTH WITH BROOM + SHOVEL AT BLASTING AREA	1.00	11650.0
749. (CLEANUP) GRIT IN BLAST BOOTH WITH BOBCAT FRONT END LOADER AT BLAST AREA	1.00	6790.0
750. (CLEANUP) GRIT IN BLASTING BOOTH WITH VACUUM AT BLASTING AREA	1.00	2730.0
Total TMU		72330.0

764. COMBINED SUB-OP

(CLEAN) UP GRIT IN BLAST BOOTH WITH TRACTOR SWEEPER AT BLAST AREA
PER 1 OPS: 1 12-AUG-93
* 2 MAN OPERATION
* SOME PARTS ARE SINGED

TOTAL TMU 89800.0

Combined sub-operation elements	Freq.	TMU
751. (CLEAN UP) GRIT IN BLASTING BOOTH WITH TRACTOR-SWEEPER AT BLASTING	1.00	1760.0
752. (CLEAN UP) GRIT IN BLASTING BOOTH WITH TRACTOR-SWEEPER AT BLASTING AREA	1.00	1620.0
753. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BOBCAT FRONT END LOADER AT BLASTING AREA	1.00	1760.0
754. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BOBCAT AT BLASTING AREA	1.00	49580.0
756. (CLEAN UP) GRIT IN BLASTING BOOTH WITH BROOM AT BLASTING AREA	1.00	35080.0
Total TMU		89800.0

760. (CHANGE) GLASS ON (HELMET) FOR BLASTING AT BLAST AREA
PER 1 OPS: 1 11-AUG-83
REPLACE WHEN NECESSARY
* 1 MAN OPERATION
OP BEGINS AT BLASTING

1 OPEN CABINET AT BLASTER A32 B0 G1 M3 X0 I0 A0	1.00	360.
2 GET+MOVE GLASS TAPE AT CABINET TO BLASTING A1 B0 G3 A32 B0 P1 A0	1.00	370.
3 GET+MANIPULATE WITH KNEEL TAPE AT HELMET A1 B16 G3 M10 X0 I0 A0	1.00	300.
4 GET+REMOVE TAPE AT HELMET TO OP F 4 A1 B0 G3 A1 B0 P1 A0	4.00	240.
5 GET+REMOVE GLASS AT HELMET TO OP A1 B0 G3 A1 B0 P1 A0	1.00	60.
6 GET+POSITION GLASS AT HELMET TO BLASTING F 3 A1 B0 G3 A1 B0 P6 A0	3.00	330.
7 GET+MANIPULATE TAPE AT OP F 12 A1 B0 G3 M10 X0 I0 A0	12.00	1680.
8 HOLD+PULL TAPE AT OP F 12 A0 B0 G0 M1 X0 I0 A0	12.00	120.
9 HOLD+POSITION TAPE AT HELMET TO BLASTING F 12 A0 B0 G0 A1 B0 P6 A0	12.00	840.
10 TOSS GLASS FROM BLASTING TO BLASTER (IN WASTE BARREL) A1 B0 G1 A32 B0 P0 A0	1.00	340.
11 PLACE TAPE FROM OP TO BLASTER (IN CABINET) A1 B0 G1 A1 B0 P3 A0	1.00	60.
TOTAL TMU		4700.

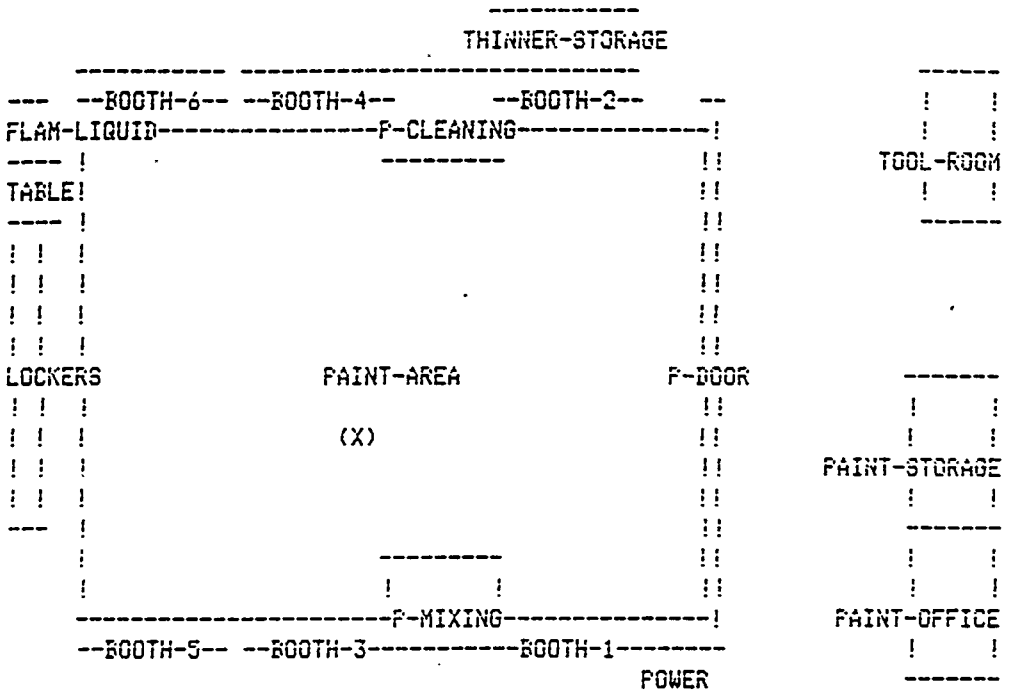
WORK MANAGEMENT MANUAL

IN-SHOP PAINTING MANUAL

INDEX

SECTION 4
LAYOUTS AND MATERIAL FLOW

4.1 WORK AREAS



Name	Location		Body/Frag/PT
WORKPLACES:			
PAINT-OFFICE	65,0	6,5	
PAINT-STORAGE	65,5	6,5	
TOOL-ROOM	66,15	5,5	
THINNER-STORAGE	35,21	10,1	
POWER	46,0	4,1	
BOOTH-1	35,1	10,1	
BOOTH-3	17,1	10,1	
BOOTH-5	5,1	10,1	
BOOTH-2	35,19	10,1	
BOOTH-4	17,19	10,1	
BOOTH-6	5,19	10,1	
P-CLEANING	27,17	8,3	
P-MIXING	27,1	8,3	
LOCKERS	0,5	2,10	
FLAM-LIQUID	0,17	2,2	
TABLE	0,15	3,2	
PAINT-AREA	5,2	45,16	

P-DOOR	30,1	1,18
TOOLS:		
STICK	P-CLEANING	
GLOVES	P-CLEANING	
SCREEN	P-CLEANING	
CRESENTWRENCH	OP	
SCREWDRIVER	OP	
PLIERS	OP	
RAG	OP	
OBJECTS:		
PAINT	PAINT-STORAGE	
BUTTON	POWER	
NOZZLE	BOOTH-6	FRAG
WOODEN-BUCK	BOOTH-6	
2X4-BOARD	BOOTH-6	
LEVER	P-CLEANING	FRAG
AIRHOSE	P-CLEANING	FRAG
PAINTCOVER	P-CLEANING	
WINGNUTS	P-CLEANING	FRAG
PAINT-POT	P-CLEANING	
COVER	P-CLEANING	
PAINTCAN	P-CLEANING	FRAG
PAINTCAN-1	P-CLEANING	
PAINTCAN-2	P-CLEANING	
SCREENTANK	P-CLEANING	
SPRAY-TIP	P-CLEANING	
SPRAYGUN	P-CLEANING	FRAG
NUT	P-CLEANING	
THINNER	P-CLEANING	
MIXCAN	P-MIXING	
SCREW	P-MIXING	FRAG
FILTER-CAP	P-MIXING	
FILTER	P-MIXING	
INNER-FILTER	P-MIXING	
SYPHON-TUBE	P-MIXING	
S-HOLDER	P-MIXING	
RAG-1	P-MIXING	FRAG
DOLLY	P-MIXING	
FILL-TUBE	P-MIXING	
AIRMIXER	P-MIXING	
THINNERTANK	P-MIXING	
THINNERPAIL	P-MIXING	
COVERALLS	LOCKERS	
PARTS-BOX	TABLE	
4'X8'-PANEL	TABLE	

LAYOUTS AND MATERIAL FLOW

PARTS PAINT-AREA
SECTION PAINT-AREA

OPERATORS:
OP PAINT-AREA 25,3 5

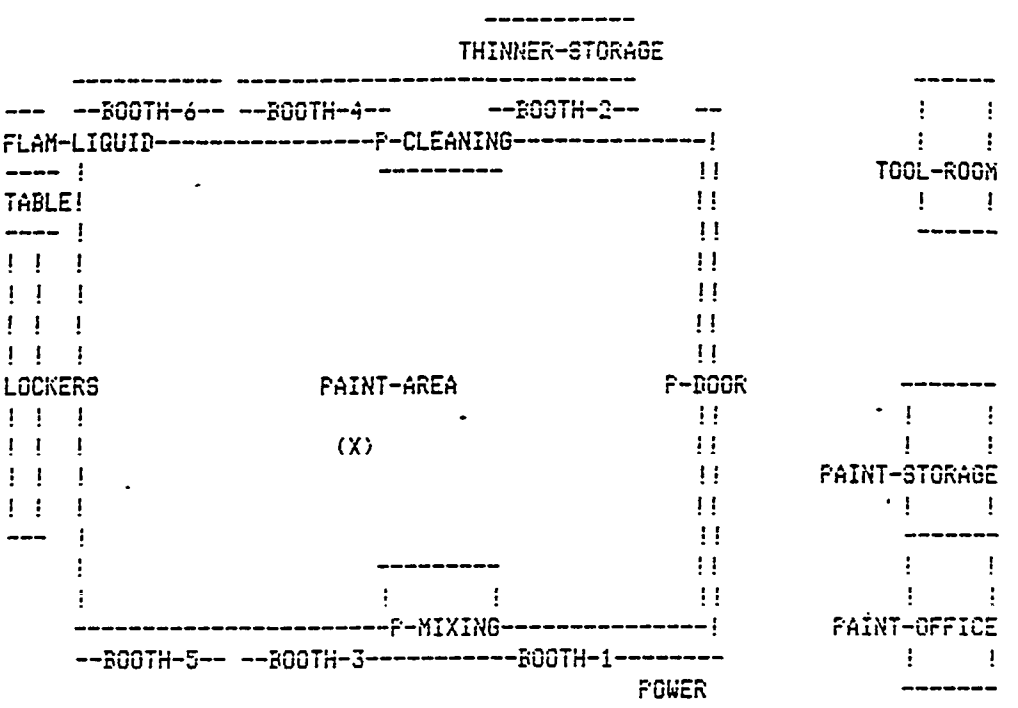
From	To	Steps
PAINT-OFFICE	PAINT-STORAGE	103
PAINT-OFFICE	TOOL-ROOM	233
PAINT-OFFICE	THINNER-STORAGE	123
PAINT-OFFICE	POWER	149
PAINT-OFFICE	BOOTH-1	147
PAINT-OFFICE	BOOTH-3	165
PAINT-OFFICE	BOOTH-5	167
PAINT-OFFICE	BOOTH-2	127
PAINT-OFFICE	BOOTH-4	153
PAINT-OFFICE	BOOTH-6	163
PAINT-OFFICE	P-CLEANING	135
PAINT-OFFICE	P-MIXING	153
PAINT-OFFICE	LOCKERS	169
PAINT-OFFICE	FLAM-LIQUID	170
PAINT-OFFICE	TABLE	169
PAINT-OFFICE	PAINT-AREA	153
PAINT-OFFICE	P-DOOR	120
PAINT-STORAGE	TOOL-ROOM	203
PAINT-STORAGE	THINNER-STORAGE	53
PAINT-STORAGE	POWER	63
PAINT-STORAGE	BOOTH-1	61
PAINT-STORAGE	BOOTH-3	63
PAINT-STORAGE	BOOTH-5	75
PAINT-STORAGE	BOOTH-2	43
PAINT-STORAGE	BOOTH-4	59
PAINT-STORAGE	BOOTH-6	73
PAINT-STORAGE	P-CLEANING	49
PAINT-STORAGE	P-MIXING	55
PAINT-STORAGE	LOCKERS	77
PAINT-STORAGE	FLAM-LIQUID	75
PAINT-STORAGE	TABLE	76
PAINT-STORAGE	PAINT-AREA	61
PAINT-STORAGE	P-DOOR	36
TOOL-ROOM	THINNER-STORAGE	217
TOOL-ROOM	POWER	233
TOOL-ROOM	BOOTH-1	231
TOOL-ROOM	BOOTH-3	237

TOOL-ROOM	BOOTH-5	253
TOOL-ROOM	BOOTH-2	219
TOOL-ROOM	BOOTH-4	231
TOOL-ROOM	BOOTH-6	250
TOOL-ROOM	P-CLEANING	223
TOOL-ROOM	P-MIXING	233
TOOL-ROOM	LOCKERS	263
TOOL-ROOM	FLAM-LIQUID	261
TOOL-ROOM	TABLE	262
TOOL-ROOM	PAINT-AREA	233
TOOL-ROOM	P-DOOR	236
THINNER-STORAGE	POWER	38
THINNER-STORAGE	BOOTH-1	38
THINNER-STORAGE	BOOTH-3	45
THINNER-STORAGE	BOOTH-5	35
THINNER-STORAGE	BOOTH-2	26
THINNER-STORAGE	BOOTH-4	40
THINNER-STORAGE	BOOTH-6	47
THINNER-STORAGE	P-CLEANING	33
THINNER-STORAGE	P-MIXING	39
THINNER-STORAGE	LOCKERS	58
THINNER-STORAGE	FLAM-LIQUID	56
THINNER-STORAGE	TABLE	57
THINNER-STORAGE	PAINT-AREA	36
THINNER-STORAGE	P-DOOR	28
POWER	BOOTH-1	14
POWER	BOOTH-3	29
POWER	BOOTH-5	39
POWER	BOOTH-2	27
POWER	BOOTH-4	33
POWER	BOOTH-6	43
POWER	P-CLEANING	30
POWER	P-MIXING	21
POWER	LOCKERS	44
POWER	FLAM-LIQUID	47
POWER	TABLE	46
POWER	PAINT-AREA	28
POWER	P-DOOR	15
BOOTH-1	BOOTH-3	18
BOOTH-1	BOOTH-5	28
BOOTH-1	BOOTH-2	23
BOOTH-1	BOOTH-4	29
BOOTH-1	BOOTH-6	33
BOOTH-1	P-CLEANING	25
BOOTH-1	P-MIXING	14
BOOTH-1	LOCKERS	35
BOOTH-1	FLAM-LIQUID	41

BOOTH-1	TABLE	39
BOOTH-1	PAINT-AREA	21
BOOTH-1	P-DOOR	17
BOOTH-3	BOOTH-5	18
BOOTH-3	BOOTH-2	29
BOOTH-3	BOOTH-4	23
BOOTH-3	BOOTH-6	26
BOOTH-3	P-CLEANING	26
BOOTH-3	P-MIXING	11
BOOTH-3	LOCKERS	21
BOOTH-3	FLAM-LIQUID	29
BOOTH-3	TABLE	26
BOOTH-3	PAINT-AREA	15
BOOTH-3	P-DOOR	29
BOOTH-5	BOOTH-2	33
BOOTH-5	BOOTH-4	26
BOOTH-5	BOOTH-6	23
BOOTH-5	P-CLEANING	30
BOOTH-5	P-MIXING	29
BOOTH-5	LOCKERS	16
BOOTH-5	FLAM-LIQUID	22
BOOTH-5	TABLE	19
BOOTH-5	PAINT-AREA	17
BOOTH-5	P-DOOR	37
BOOTH-2	BOOTH-4	18
BOOTH-2	BOOTH-6	28
BOOTH-2	P-CLEANING	13
BOOTH-2	P-MIXING	24
BOOTH-2	LOCKERS	34
BOOTH-2	FLAM-LIQUID	32
BOOTH-2	TABLE	33
BOOTH-2	PAINT-AREA	21
BOOTH-2	P-DOOR	17
BOOTH-4	BOOTH-6	13
BOOTH-4	P-CLEANING	11
BOOTH-4	P-MIXING	23
BOOTH-4	LOCKERS	22
BOOTH-4	FLAM-LIQUID	20
BOOTH-4	TABLE	21
BOOTH-4	PAINT-AREA	17
BOOTH-4	P-DOOR	20
BOOTH-6	P-CLEANING	21
BOOTH-6	P-MIXING	29
BOOTH-6	LOCKERS	15
BOOTH-6	FLAM-LIQUID	9
BOOTH-6	TABLE	11
BOOTH-6	PAINT-AREA	18

BOOTH-6	P-DOOR 38
P-CLEANING	P-MIXING 24
P-CLEANING	LOCKERS 29
P-CLEANING	FLAM-LIQUID 26
P-CLEANING	TABLE 27
P-CLEANING	PAINT-AREA 18
P-CLEANING	P-DOOR 23
P-MIXING	LOCKERS 26
P-MIXING	FLAM-LIQUID 32
P-MIXING	TABLE 29
P-MIXING	PAINT-AREA 18
P-MIXING	P-DOOR 23
LOCKERS	FLAM-LIQUID 14
LOCKERS	TABLE 9
LOCKERS	PAINT-AREA 19
LOCKERS	P-DOOR 43
FLAM-LIQUID	TABLE 9
FLAM-LIQUID	PAINT-AREA 20
FLAM-LIQUID	P-DOOR 46
TABLE	PAINT-AREA 19
TABLE	P-DOOR 45
PAINT-AREA	P-DOOR 27

LAYOUTE AND MATERIAL FLOW



Name	Location		Body/Fras/PT
WORKPLACES:			
PAINT-OFFICE	65,0	6,5	
PAINT-STORAGE	65,5	6,5	
TOOL-ROOM	66,15	5,5	
THINNER-STORAGE	35,21	10,1	
POWER	46,0	4,1	
BOOTH-1	35,1	10,1	
BOOTH-3	17,1	10,1	
BOOTH-5	5,1	10,1	
BOOTH-2	35,19	10,1	
BOOTH-4	17,19	10,1	
BOOTH-6	5,19	10,1	
P-CLEANING	27,17	8,3	
P-MIXING	27,1	8,3	
LOCKERS	0,5	2,10	
FLAM-LIQUID	0,17	2,2	
TABLE	0,15	3,2	
PAINT-AREA	5,2	45,16	
P-DOOR	50,1	1,18	

TOOLS:		
STICK	P-CLEANING	
GLOVES	P-CLEANING	
SCREEN	P-CLEANING	
CRESENTWRENCH	OP	
SCREWDRIVER	OP	
PLIERS	OP	
RAG	OP	
OBJECTS:		
PAINT	PAINT-STORAGE	
BUTTON	POWER	
LEVER	BOOTH-6	FRAG
NOZZLE	BOOTH-6	FRAG
WOODEN-BUCK	BOOTH-6	
2X4-BOARD	BOOTH-6	
AIRHOSE	P-CLEANING	FRAG
PAINTCOVER	P-CLEANING	
WINGNUTS	P-CLEANING	FRAG
PAINT-POT	P-CLEANING	
COVER	P-CLEANING	
PAINTCAN	P-CLEANING	FRAG
PAINTCAN-1	P-CLEANING	
PAINTCAN-2	P-CLEANING	
SCREENTANK	P-CLEANING	
THINNERTANK	P-MIXING	
MIXCAN	P-MIXING	
SPRAY-TIP	P-MIXING	
THINNERPAIL	P-MIXING	
SPRAYGUN	P-MIXING	FRAG
SCREW	P-MIXING	FRAG
FILTER-CAP	P-MIXING	
FILTER	P-MIXING	
INNER-FILTER	P-MIXING	
SYPHON-TUBE	P-MIXING	
S-HOLDER	P-MIXING	
RAG-1	P-MIXING	FRAG
DOLLY	P-MIXING	
FILL-TUBE	P-MIXING	
AIRMIXER	P-MIXING	
COVERALLS	LOCKERS	
4'X8'-PANEL	TABLE	
OPERATORS:		
OP	PAINT-AREA	25,8 B

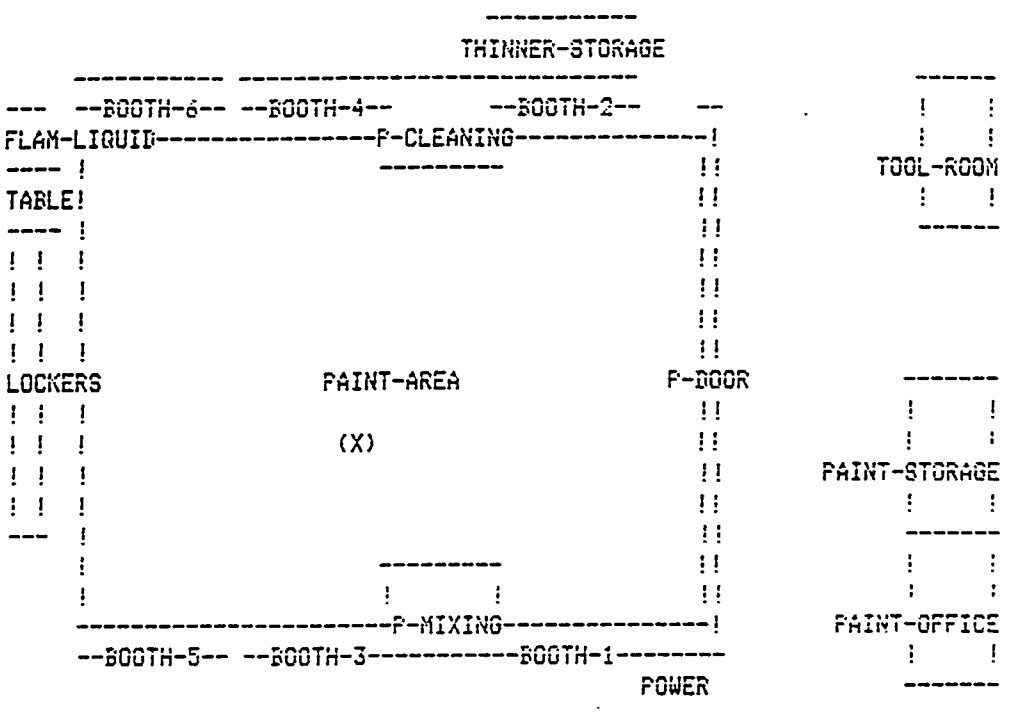
From	To	Steps
PAINT-OFFICE	PAINT-STORAGE	103
PAINT-OFFICE	TOOL-ROOM	233
PAINT-OFFICE	THINNER-STORAGE	123
PAINT-OFFICE	POWER	149
PAINT-OFFICE	BOOTH-1	147
PAINT-OFFICE	BOOTH-3	165
PAINT-OFFICE	BOOTH-5	167
PAINT-OFFICE	BOOTH-2	127
PAINT-OFFICE	BOOTH-4	153
PAINT-OFFICE	BOOTH-6	163
PAINT-OFFICE	P-CLEANING	135
PAINT-OFFICE	P-MIXING	153
PAINT-OFFICE	LOCKERS	169
PAINT-OFFICE	FLAM-LIQUID	170
PAINT-OFFICE	TABLE	169
PAINT-OFFICE	PAINT-AREA	153
PAINT-OFFICE	P-DOOR	120
PAINT-STORAGE	TOOL-ROOM	203
PAINT-STORAGE	THINNER-STORAGE	53
PAINT-STORAGE	POWER	63
PAINT-STORAGE	BOOTH-1	61
PAINT-STORAGE	BOOTH-3	63
PAINT-STORAGE	BOOTH-5	75
PAINT-STORAGE	BOOTH-2	43
PAINT-STORAGE	BOOTH-4	59
PAINT-STORAGE	BOOTH-6	73
PAINT-STORAGE	P-CLEANING	47
PAINT-STORAGE	P-MIXING	55
PAINT-STORAGE	LOCKERS	77
PAINT-STORAGE	FLAM-LIQUID	75
PAINT-STORAGE	TABLE	76
PAINT-STORAGE	PAINT-AREA	61
PAINT-STORAGE	P-DOOR	36
TOOL-ROOM	THINNER-STORAGE	217
TOOL-ROOM	POWER	233
TOOL-ROOM	BOOTH-1	231
TOOL-ROOM	BOOTH-3	237
TOOL-ROOM	BOOTH-5	255
TOOL-ROOM	BOOTH-2	219
TOOL-ROOM	BOOTH-4	231
TOOL-ROOM	BOOTH-6	250
TOOL-ROOM	P-CLEANING	225
TOOL-ROOM	P-MIXING	233
TOOL-ROOM	LOCKERS	263

TOOL-ROOM	FLAM-LIQUID	261
TOOL-ROOM	TABLE	262
TOOL-ROOM	PAINT-AREA	233
TOOL-ROOM	P-DOOR	236
THINNER-STORAGE	POWER	36
THINNER-STORAGE	BOOTH-1	38
THINNER-STORAGE	BOOTH-3	45
THINNER-STORAGE	BOOTH-5	55
THINNER-STORAGE	BOOTH-2	26
THINNER-STORAGE	BOOTH-4	40
THINNER-STORAGE	BOOTH-6	47
THINNER-STORAGE	P-CLEANING	33
THINNER-STORAGE	P-MIXING	39
THINNER-STORAGE	LOCKERS	58
THINNER-STORAGE	FLAM-LIQUID	56
THINNER-STORAGE	TABLE	57
THINNER-STORAGE	PAINT-AREA	36
THINNER-STORAGE	P-DOOR	28
POWER	BOOTH-1	14
POWER	BOOTH-3	29
POWER	BOOTH-5	39
POWER	BOOTH-2	27
POWER	BOOTH-4	33
POWER	BOOTH-6	43
POWER	P-CLEANING	30
POWER	P-MIXING	21
POWER	LOCKERS	44
POWER	FLAM-LIQUID	47
POWER	TABLE	46
POWER	PAINT-AREA	28
POWER	P-DOOR	13
BOOTH-1	BOOTH-3	18
BOOTH-1	BOOTH-5	28
BOOTH-1	BOOTH-2	23
BOOTH-1	BOOTH-4	29
BOOTH-1	BOOTH-6	33
BOOTH-1	P-CLEANING	25
BOOTH-1	P-MIXING	14.
BOOTH-1	LOCKERS	35
BOOTH-1	FLAM-LIQUID	41
BOOTH-1	TABLE	39
BOOTH-1	PAINT-AREA	21
BOOTH-1	P-DOOR	17
BOOTH-3	BOOTH-5	18
BOOTH-3	BOOTH-2	29
BOOTH-3	BOOTH-4	23
BOOTH-3	BOOTH-6	26

BOOTH-3	P-CLEANING	25
BOOTH-3	P-MIXING	11
BOOTH-3	LOCKERS	21
BOOTH-3	FLAM-LIQUID	29
BOOTH-3	TABLE	26
BOOTH-3	PAINT-AREA	15
BOOTH-3	P-DOOR	29
BOOTH-5	BOOTH-2	33
BOOTH-5	BOOTH-4	26
BOOTH-5	BOOTH-6	23
BOOTH-5	P-CLEANING	30
BOOTH-5	P-MIXING	20
BOOTH-5	LOCKERS	16
BOOTH-5	FLAM-LIQUID	22
BOOTH-5	TABLE	19
BOOTH-5	PAINT-AREA	17
BOOTH-5	P-DOOR	37
BOOTH-2	BOOTH-4	18
BOOTH-2	BOOTH-6	38
BOOTH-2	P-CLEANING	13
BOOTH-2	P-MIXING	24
BOOTH-2	LOCKERS	34
BOOTH-2	FLAM-LIQUID	32
BOOTH-2	TABLE	33
BOOTH-2	PAINT-AREA	21
BOOTH-2	P-DOOR	17
BOOTH-4	BOOTH-6	13
BOOTH-4	P-CLEANING	11
BOOTH-4	P-MIXING	23
BOOTH-4	LOCKERS	22
BOOTH-4	FLAM-LIQUID	20
BOOTH-4	TABLE	21
BOOTH-4	PAINT-AREA	17
BOOTH-4	P-DOOR	20
BOOTH-6	P-CLEANING	21
BOOTH-6	P-MIXING	29
BOOTH-6	LOCKERS	15
BOOTH-6	FLAM-LIQUID	9
BOOTH-6	TABLE	11
BOOTH-6	PAINT-AREA	18
BOOTH-6	P-DOOR	38
P-CLEANING	P-MIXING	24
P-CLEANING	LOCKERS	29
P-CLEANING	FLAM-LIQUID	26
P-CLEANING	TABLE	27
P-CLEANING	PAINT-AREA	18
P-CLEANING	P-DOOR	23

P-MIXING	LOCKERS	26
P-MIXING	FLAM-LIQUID	32
P-MIXING	TABLE	29
P-MIXING	PAINT-AREA	18
P-MIXING	P-DOOR	23
LOCKERS	FLAM-LIQUID	14
LOCKERS	TABLE	9
LOCKERS	PAINT-AREA	19
LOCKERS	P-DOOR	43
FLAM-LIQUID	TABLE	9
FLAM-LIQUID	PAINT-AREA	20
FLAM-LIQUID	P-DOOR	46
TABLE	PAINT-AREA	19
TABLE	P-DOOR	45
PAINT-AREA	P-DOOR	27

LAYOUTS AND MATERIAL FLOW



Name	Location		Body/Fras/PT
WORKPLACES:			
PAINT-OFFICE	65,0	6,5	
PAINT-STORAGE	65,5	6,5	
TOOL-ROOM	66,15	5,5	
THINNER-STORAGE	35,21	10,1	
POWER	46,0	4,1	
BOOTH-1	35,1	10,1	
BOOTH-3	17,1	10,1	
BOOTH-5	5,1	10,1	
BOOTH-2	35,19	10,1	
BOOTH-4	17,19	10,1	
BOOTH-6	5,19	10,1	
P-CLEANING	27,17	8,3	
P-MIXING	27,1	8,3	
LOCKERS	0,5	2,10	
FLAM-LIQUID	0,17	2,2	
TABLE	0,15	3,2	
PAINT-AREA	5,2	45,16	
P-DOOR	50,1	1,18	

LAYOUTS AND MATERIAL FLOW

TOOLS:		
STICK	P-CLEANING	
GLOVES	P-CLEANING	
SCREEN	P-CLEANING	
CRESENTWRENCH	OP	
SCREWDRIVER	OP	
PLIERS	OP	
RAG	OP	
OBJECTS:		
PAINT	PAINT-STORAGE	
BUTTON	POWER	
LEVER	BOOTH-6	FRAG
NOZZLE	BOOTH-6	FRAG
PAINTCAN-2	P-CLEANING	
SCREENTANK	P-CLEANING	
AIRHOSE	P-CLEANING	FRAG
PAINTCOVER	P-CLEANING	
WINGNUTS	P-CLEANING	FRAG
PAINT-POT	P-CLEANING	
COVER	P-CLEANING	
PAINTCAN	P-CLEANING	FRAG
PAINTCAN-1	P-CLEANING	
FILL-TUBE	P-MIXING	
AIRMIXER	P-MIXING	
THINNERTANK	P-MIXING	
MIXCAN	P-MIXING	
SPRAY-TIP	P-MIXING	
THINNERPAIL	P-MIXING	
SPRAYGUN	P-MIXING	FRAG
SCREW	P-MIXING	FRAG
FILTER-CAP	P-MIXING	
FILTER	P-MIXING	
INNER-FILTER	P-MIXING	
SYPHON-TUBE	P-MIXING	
S-HOLDER	P-MIXING	
RAG-1	P-MIXING	FRAG
DOLLY	P-MIXING	
COVERALLS	LOCKERS	
OPERATORS:		
OP	PAINT-AREA	25.8 F

From	To	Steps

PAINT-OFFICE	PAINT-STORAGE	103
PAINT-OFFICE	TOOL-ROOM	233
PAINT-OFFICE	THINNER-STORAGE	123
PAINT-OFFICE	POWER	149
PAINT-OFFICE	BOOTH-1	147
PAINT-OFFICE	BOOTH-3	165
PAINT-OFFICE	BOOTH-5	187
PAINT-OFFICE	BOOTH-2	127
PAINT-OFFICE	BOOTH-4	153
PAINT-OFFICE	BOOTH-6	163
PAINT-OFFICE	P-CLEANING	135
PAINT-OFFICE	P-MIXING	153
PAINT-OFFICE	LOCKERS	169
PAINT-OFFICE	FLAM-LIQUID	170
PAINT-OFFICE	TABLE	169
PAINT-OFFICE	PAINT-AREA	153
PAINT-OFFICE	P-DOOR	120
PAINT-STORAGE	TOOL-ROOM	203
PAINT-STORAGE	THINNER-STORAGE	53
PAINT-STORAGE	POWER	63
PAINT-STORAGE	BOOTH-1	61
PAINT-STORAGE	BOOTH-3	63
PAINT-STORAGE	BOOTH-5	75
PAINT-STORAGE	BOOTH-2	43
PAINT-STORAGE	BOOTH-4	59
PAINT-STORAGE	BOOTH-6	73
PAINT-STORAGE	P-CLEANING	49
PAINT-STORAGE	P-MIXING	55
PAINT-STORAGE	LOCKERS	77
PAINT-STORAGE	FLAM-LIQUID	75
PAINT-STORAGE	TABLE	76
PAINT-STORAGE	PAINT-AREA	61
PAINT-STORAGE	P-DOOR	36
TOOL-ROOM	THINNER-STORAGE	217
TOOL-ROOM	POWER	233
TOOL-ROOM	BOOTH-1	231
TOOL-ROOM	BOOTH-3	237
TOOL-ROOM	BOOTH-5	255
TOOL-ROOM	BOOTH-2	219
TOOL-ROOM	BOOTH-4	231
TOOL-ROOM	BOOTH-6	250
TOOL-ROOM	P-CLEANING	225
TOOL-ROOM	P-MIXING	233
TOOL-ROOM	LOCKERS	263
TOOL-ROOM	FLAM-LIQUID	261
TOOL-ROOM	TABLE	262
TOOL-ROOM	PAINT-AREA	233

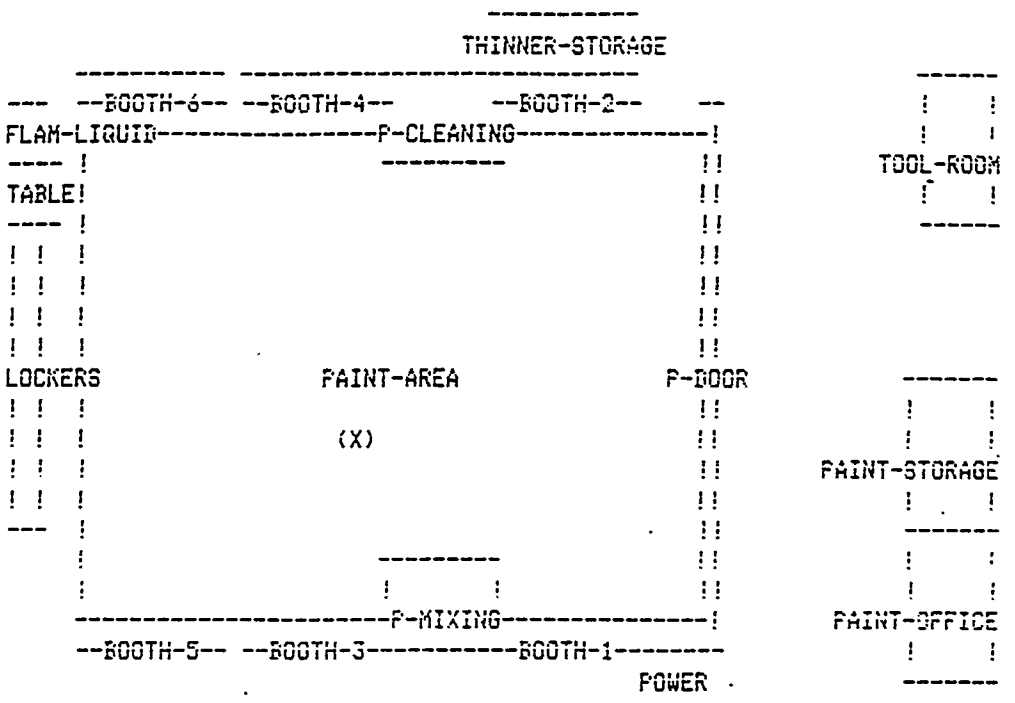
TOOL-ROOM	P-DOOR 23
THINNER-STORAGE	POWER 38
THINNER-STORAGE	BOOTH-1 38
THINNER-STORAGE	BOOTH-3 45
THINNER-STORAGE	BOOTH-5 53
THINNER-STORAGE	BOOTH-2 26
THINNER-STORAGE	BOOTH-4 40
THINNER-STORAGE	BOOTH-6 47
THINNER-STORAGE	P-CLEANING 33
THINNER-STORAGE	P-MIXING 39
THINNER-STORAGE	LOCKERS 56
THINNER-STORAGE	FLAM-LIQUID 56
THINNER-STORAGE	TABLE 57
THINNER-STORAGE	PAINT-AREA 36
THINNER-STORAGE	P-DOOR 28
POWER	BOOTH-1 14
POWER	BOOTH-3 29
POWER	BOOTH-5 39
POWER	BOOTH-2 27
POWER	BOOTH-4 33
POWER	BOOTH-6 43
POWER	P-CLEANING 30
POWER	P-MIXING 21
POWER	LOCKERS 44
POWER	FLAM-LIQUID 47
POWER	TABLE 46
POWER	PAINT-AREA 28
POWER	P-DOOR 15
BOOTH-1	BOOTH-3 18
BOOTH-1	BOOTH-5 28
BOOTH-1	BOOTH-2 23
BOOTH-1	BOOTH-4 29
BOOTH-1	BOOTH-6 33
BOOTH-1	P-CLEANING 25
BOOTH-1	P-MIXING 14
BOOTH-1	LOCKERS 35
BOOTH-1	FLAM-LIQUID 41
BOOTH-1	TABLE 39
BOOTH-1	PAINT-AREA 21
BOOTH-1	P-DOOR 17
BOOTH-3	BOOTH-5 18
BOOTH-3	BOOTH-2 29
BOOTH-3	BOOTH-4 23
BOOTH-3	BOOTH-6 26
BOOTH-3	P-CLEANING 26
BOOTH-3	P-MIXING 11
BOOTH-3	LOCKERS 21

BOOTH-3	FLAM-LIQUID	29
BOOTH-3	TABLE	26
BOOTH-3	PAINT-AREA	13
BOOTH-3	P-DOOR	29
BOOTH-5	BOOTH-2	33
BOOTH-5	BOOTH-4	26
BOOTH-5	BOOTH-6	23
BOOTH-5	P-CLEANING	30
BOOTH-5	P-MIXING	20
BOOTH-5	LOCKERS	16
BOOTH-5	FLAM-LIQUID	22
BOOTH-5	TABLE	19
BOOTH-5	PAINT-AREA	17
BOOTH-5	P-DOOR	37
BOOTH-2	BOOTH-4	18
BOOTH-2	BOOTH-6	28
BOOTH-2	P-CLEANING	13
BOOTH-2	P-MIXING	24
BOOTH-2	LOCKERS	34
BOOTH-2	FLAM-LIQUID	32
BOOTH-2	TABLE	33
BOOTH-2	PAINT-AREA	21
BOOTH-2	P-DOOR	17
BOOTH-4	BOOTH-6	13
BOOTH-4	P-CLEANING	11
BOOTH-4	P-MIXING	23
BOOTH-4	LOCKERS	22
BOOTH-4	FLAM-LIQUID	20
BOOTH-4	TABLE	21
BOOTH-4	PAINT-AREA	17
BOOTH-4	P-DOOR	20
BOOTH-6	P-CLEANING	21
BOOTH-6	P-MIXING	29
BOOTH-6	LOCKERS	15
BOOTH-6	FLAM-LIQUID	9
BOOTH-6	TABLE	11
BOOTH-6	PAINT-AREA	18
BOOTH-6	P-DOOR	38
P-CLEANING	P-MIXING	24
P-CLEANING	LOCKERS	29
P-CLEANING	FLAM-LIQUID	26
P-CLEANING	TABLE	27
P-CLEANING	PAINT-AREA	18
P-CLEANING	P-DOOR	23
P-MIXING	LOCKERS	26
P-MIXING	FLAM-LIQUID	32
P-MIXING	TABLE	29

LAYOUTS AND MATERIAL FLOW

P-MIXING	PAINT-AREA	16
P-MIXING	P-DOOR	23
LOCKERS	FLAM-LIQUID	14
LOCKERS	TABLE	9
LOCKERS	PAINT-AREA	19
LOCKERS	P-DOOR	43
FLAM-LIQUID	TABLE	9
FLAM-LIQUID	PAINT-AREA	20
FLAM-LIQUID	P-DOOR	46
TABLE	PAINT-AREA	19
TABLE	P-DOOR	45
PAINT-AREA	P-DOOR	27

LAYOUTS AND MATERIAL FLOW



Name	Location	Body/Frag/PT
WORKPLACES:		
PAINT-OFFICE	65,0	6,5
PAINT-STORAGE	65,5	6,5
TOOL-ROOM	66,15	5,5
THINNER-STORAGE	35,21	10,1
POWER	46,0	4,1
BOOTH-1	35,1	10,1
BOOTH-3	17,1	10,1
BOOTH-5	5,1	10,1
BOOTH-2	35,19	10,1
BOOTH-4	17,19	10,1
BOOTH-6	5,19	10,1
P-CLEANING	27,17	8,3
P-MIXING	27,1	8,3
LOCKERS	0,5	2,10
FLAM-LIQUID	0,17	2,2
TABLE	0,15	3,2
PAINT-AREA	5,2	45,16
P-DOOR	50,1	1,18

LAYOUTS AND MATERIAL FLOW

TOOLS:		
MIXCAN	P-CLEANING	
STICK	P-CLEANING	
GLOVES	P-CLEANING	
RAG	P-CLEANING	
SCREEN	P-CLEANING	
CRESENTWRENCH	P-CLEANING	
SPRAYGUN	LOCKERS	
SCREWDRIVER	OP	
PLIERS	OP	
OBJECTS:		
PAINT	PAINT-STORAGE	
BUTTON	POWER	
NOZZLE	BOOTH-6	FRAG
LEVER	BOOTH-6	FRAG
PAINTCAN-1	P-CLEANING	
PAINTCAN-2	P-CLEANING	
SCREENTANK	P-CLEANING	
AIRHOSE	P-CLEANING	FRAG
PAINTCOVER	P-CLEANING	
WINGNUTS	P-CLEANING	FRAG
PAINT-POT	P-CLEANING	
COVER	P-CLEANING	
PAINTCAN	P-CLEANING	
OPERATORS:		
OP	PAINT-AREA	25,8 B

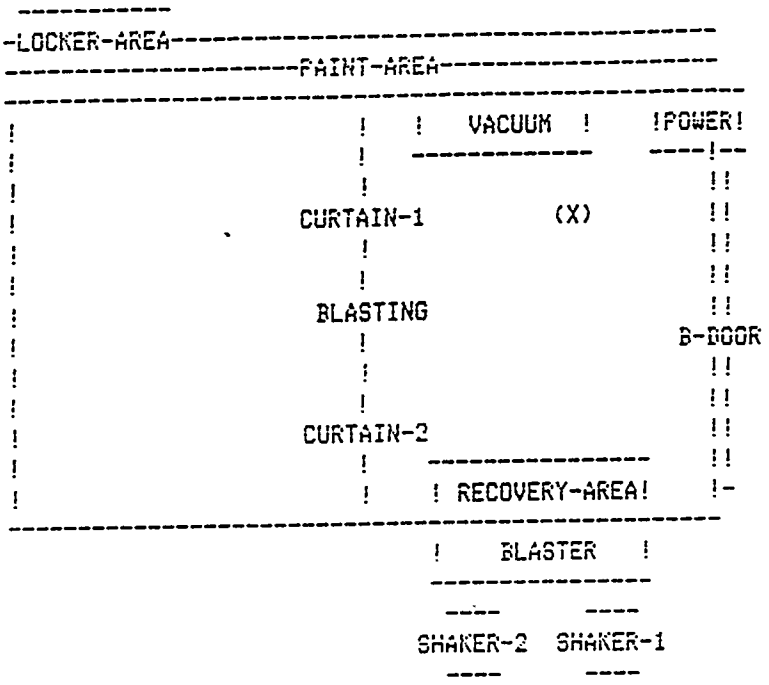
From	To	Steps
PAINT-OFFICE	PAINT-STORAGE	103
PAINT-OFFICE	TOOL-ROOM	233
PAINT-OFFICE	THINNER-STORAGE	123
PAINT-OFFICE	POWER	149
PAINT-OFFICE	BOOTH-1	147
PAINT-OFFICE	BOOTH-3	165
PAINT-OFFICE	BOOTH-5	167
PAINT-OFFICE	BOOTH-2	127
PAINT-OFFICE	BOOTH-4	153
PAINT-OFFICE	BOOTH-6	163
PAINT-OFFICE	P-CLEANING	135
PAINT-OFFICE	P-MIXING	153
PAINT-OFFICE	LOCKERS	169
PAINT-OFFICE	FLAM-LIQUID	170

PAINT-OFFICE	TABLE	149
PAINT-OFFICE	PAINT-AREA	153
PAINT-OFFICE	P-DOOR	170
PAINT-STORAGE	TOOL-ROOM	203
PAINT-STORAGE	THINNER-STORAGE	33
PAINT-STORAGE	POWER	63
PAINT-STORAGE	BOOTH-1	61
PAINT-STORAGE	BOOTH-3	63
PAINT-STORAGE	BOOTH-5	75
PAINT-STORAGE	BOOTH-2	43
PAINT-STORAGE	BOOTH-4	59
PAINT-STORAGE	BOOTH-6	73
PAINT-STORAGE	P-CLEANING	49
PAINT-STORAGE	P-MIXING	55
PAINT-STORAGE	LOCKERS	77
PAINT-STORAGE	FLAM-LIQUID	75
PAINT-STORAGE	TABLE	76
PAINT-STORAGE	PAINT-AREA	61
PAINT-STORAGE	P-DOOR	36
TOOL-ROOM	THINNER-STORAGE	217
TOOL-ROOM	POWER	233
TOOL-ROOM	BOOTH-1	231
TOOL-ROOM	BOOTH-3	237
TOOL-ROOM	BOOTH-5	255
TOOL-ROOM	BOOTH-2	219
TOOL-ROOM	BOOTH-4	231
TOOL-ROOM	BOOTH-6	250
TOOL-ROOM	P-CLEANING	225
TOOL-ROOM	P-MIXING	233
TOOL-ROOM	LOCKERS	263
TOOL-ROOM	FLAM-LIQUID	261
TOOL-ROOM	TABLE	262
TOOL-ROOM	PAINT-AREA	233
TOOL-ROOM	P-DOOR	236
THINNER-STORAGE	POWER	38
THINNER-STORAGE	BOOTH-1	38
THINNER-STORAGE	BOOTH-3	45
THINNER-STORAGE	BOOTH-5	55
THINNER-STORAGE	BOOTH-2	26
THINNER-STORAGE	BOOTH-4	40
THINNER-STORAGE	BOOTH-6	47
THINNER-STORAGE	P-CLEANING	33
THINNER-STORAGE	P-MIXING	39
THINNER-STORAGE	LOCKERS	58
THINNER-STORAGE	FLAM-LIQUID	56
THINNER-STORAGE	TABLE	57
THINNER-STORAGE	PAINT-AREA	36

THINNER-STORAGE	P-DOOR	28
POWER	BOOTH-1	14
POWER	BOOTH-3	29
POWER	BOOTH-5	39
POWER	BOOTH-2	27
POWER	BOOTH-4	33
POWER	BOOTH-6	43
POWER	P-CLEANING	30
POWER	P-MIXING	21
POWER	LOCKERS	44
POWER	FLAM-LIQUID	47
POWER	TABLE	46
POWER	PAINT-AREA	28
POWER	P-DOOR	15
BOOTH-1	BOOTH-3	18
BOOTH-1	BOOTH-5	28
BOOTH-1	BOOTH-2	23
BOOTH-1	BOOTH-4	29
BOOTH-1	BOOTH-6	33
BOOTH-1	P-CLEANING	25
BOOTH-1	P-MIXING	14
BOOTH-1	LOCKERS	35
BOOTH-1	FLAM-LIQUID	41
BOOTH-1	TABLE	39
BOOTH-1	PAINT-AREA	21
BOOTH-1	P-DOOR	17
BOOTH-3	BOOTH-5	18
BOOTH-3	BOOTH-2	29
BOOTH-3	BOOTH-4	23
BOOTH-3	BOOTH-6	26
BOOTH-3	P-CLEANING	26
BOOTH-3	P-MIXING	11
BOOTH-3	LOCKERS	21
BOOTH-3	FLAM-LIQUID	29
BOOTH-3	TABLE	26
BOOTH-3	PAINT-AREA	15
BOOTH-3	P-DOOR	29
BOOTH-5	BOOTH-2	33
BOOTH-5	BOOTH-4	26
BOOTH-5	BOOTH-6	23
BOOTH-5	P-CLEANING	30
BOOTH-5	P-MIXING	20
BOOTH-5	LOCKERS	16
BOOTH-5	FLAM-LIQUID	22
BOOTH-5	TABLE	19
BOOTH-5	PAINT-AREA	17
BOOTH-5	P-DOOR	37

BOOTH-2	BOOTH-4	18
BOOTH-2	BOOTH-6	28
BOOTH-2	P-CLEANING	13
BOOTH-2	P-MIXING	24
BOOTH-2	LOCKERS	34
BOOTH-2	FLAM-LIQUID	32
BOOTH-2	TABLE	33
BOOTH-2	PAINT-AREA	21
BOOTH-2	P-DOOR	17
BOOTH-4	BOOTH-6	13
BOOTH-4	P-CLEANING	11
BOOTH-4	P-MIXING	23
BOOTH-4	LOCKERS	22
BOOTH-4	FLAM-LIQUID	20
BOOTH-4	TABLE	21
BOOTH-4	PAINT-AREA	17
BOOTH-4	P-DOOR	20
BOOTH-6	P-CLEANING	21
BOOTH-6	P-MIXING	29
BOOTH-6	LOCKERS	15
BOOTH-6	FLAM-LIQUID	9
BOOTH-6	TABLE	11
BOOTH-6	PAINT-AREA	18
BOOTH-6	P-DOOR	38
P-CLEANING	P-MIXING	24
P-CLEANING	LOCKERS	29
P-CLEANING	FLAM-LIQUID	26
P-CLEANING	TABLE	27
P-CLEANING	PAINT-AREA	18
P-CLEANING	P-DOOR	23
P-MIXING	LOCKERS	26
P-MIXING	FLAM-LIQUID	32
P-MIXING	TABLE	29
P-MIXING	PAINT-AREA	18
P-MIXING	P-DOOR	23
LOCKERS	FLAM-LIQUID	14
LOCKERS	TABLE	9
LOCKERS	PAINT-AREA	19
LOCKERS	P-DOOR	43
FLAM-LIQUID	TABLE	9
FLAM-LIQUID	PAINT-AREA	20
FLAM-LIQUID	P-DOOR	46
TABLE	PAINT-AREA	19
TABLE	P-DOOR	45
PAINT-AREA	P-DOOR	27

LAYOUTS AND MATERIAL FLOW



Name	Location		Body/Frag/FT
WORKPLACES:			
BLASTING	0,5	50,14	
BLASTER	30,3	15,2	
VACUUM	29,17	12,2	
RECOVERY-AREA	30,5	15,2	
POWER	46,17	6,2	
CURTAIN-1	25,12	0,7	
B-DOOR	50,6	1,11	
SHAKER-1	41,0	3,2	
SHAKER-2	31,0	3,2	
CURTAIN-2	25,5	0,7	
PAINT-AREA	0,20	50,1	
LOCKER-AREA	1,21	10,1	
TOOLS:			
PLIERS	OP		
WRENCH	OP		
RAG	OP		
SCREWDRIVER	OP		

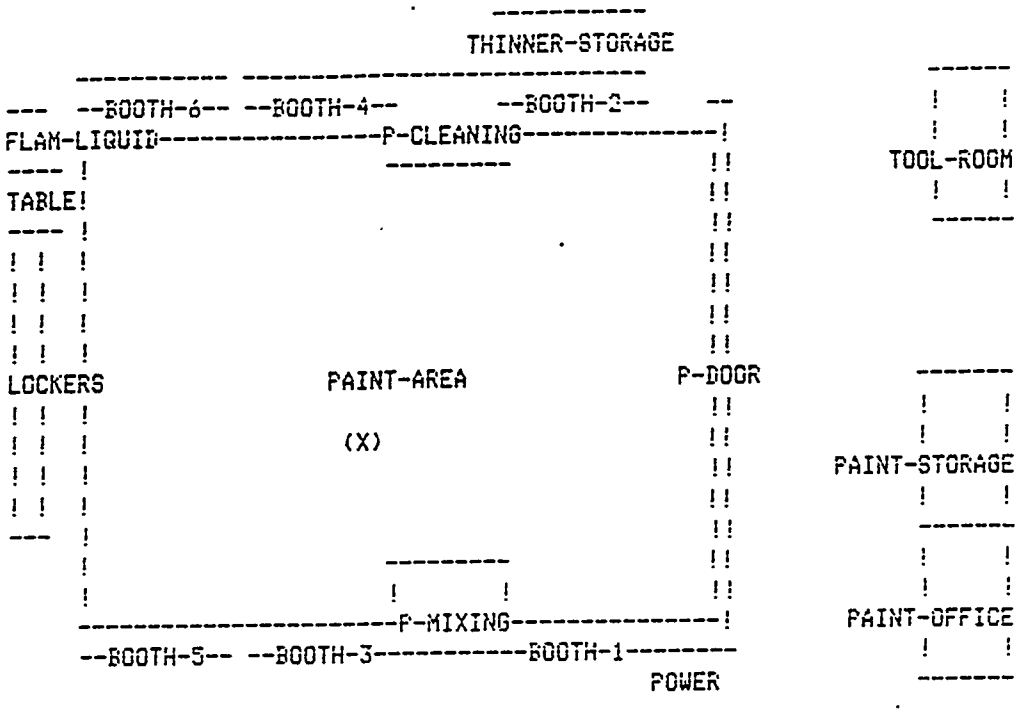
OBJECTS:		
HELMET	BLASTING	
STRAP	BLASTING	FRAG
CAPE	BLASTING	
WOODEN-WEDGE	BLASTING	
B-N-SWITCH	BLASTING	
BLAST-HOSE	BLASTING	
BOBCAT	BLASTING	
VACUUM-HOSE	BLASTING	
GRIT	BLASTING	
GLOVE	BLASTING	
LEVER	BLASTING	FRAG
SWITCH	BLASTING	FRAG
PLASTIC	BLASTING	FRAG
CLUTCH-PEDAL	BLASTING	FRAG
BUTTON	BLASTER	FRAG
AIRHOSE	RECOVERY-AREA	
SHOVEL	RECOVERY-AREA	
WALLRACK	RECOVERY-AREA	
POWER-SWEEPER	B-DOOR	
BROOM	B-DOOR	
LOCKER	LOCKER-AREA	
TAPE	LOCKER-AREA	FRAG
LINER	LOCKER-AREA	
EARPLUGS	LOCKER-AREA	
ZIPPER	LOCKER-AREA	
BOX	LOCKER-AREA	
COVERALLS	LOCKER-AREA	
HARDHAT	LOCKER-AREA	
EQUIPMENT:		
TRACTOR-SWEEPER	BLASTING	
OPERATORS:		
OP	BLASTING	40,15 B

From	To	Steps
BLASTING	BLASTER	19
BLASTING	VACUUM	19
BLASTING	RECOVERY-AREA	22
BLASTING	POWER	25
BLASTING	CURTAIN-1	13
BLASTING	B-DOOR	22
BLASTING	SHAKER-1	46

BLASTING	SHAKER-2	53
BLASTING	CURTAIN-2	13
BLASTING	PAINT-AREA	50
BLASTING	LOCKER-AREA	75
BLASTER	VACUUM	26
BLASTER	RECOVERY-AREA	9
BLASTER	POWER	29
BLASTER	CURTAIN-1	26
BLASTER	B-DOOR	19
BLASTER	SHAKER-1	30
BLASTER	SHAKER-2	36
BLASTER	CURTAIN-2	14
BLASTER	PAINT-AREA	75
BLASTER	LOCKER-AREA	100
VACUUM	RECOVERY-AREA	24
VACUUM	POWER	11
VACUUM	CURTAIN-1	17
VACUUM	B-DOOR	17
VACUUM	SHAKER-1	45
VACUUM	SHAKER-2	53
VACUUM	CURTAIN-2	25
VACUUM	PAINT-AREA	40
VACUUM	LOCKER-AREA	75
RECOVERY-AREA	POWER	28
RECOVERY-AREA	CURTAIN-1	25
RECOVERY-AREA	B-DOOR	18
RECOVERY-AREA	SHAKER-1	32
RECOVERY-AREA	SHAKER-2	40
RECOVERY-AREA	CURTAIN-2	14
RECOVERY-AREA	PAINT-AREA	65
RECOVERY-AREA	LOCKER-AREA	93
POWER	CURTAIN-1	26
POWER	B-DOOR	16
POWER	SHAKER-1	46
POWER	SHAKER-2	54
POWER	CURTAIN-2	28
POWER	PAINT-AREA	30
POWER	LOCKER-AREA	50.
CURTAIN-1	B-DOOR	26
CURTAIN-1	SHAKER-1	48
CURTAIN-1	SHAKER-2	56
CURTAIN-1	CURTAIN-2	26
CURTAIN-1	PAINT-AREA	65
CURTAIN-1	LOCKER-AREA	75
B-DOOR	SHAKER-1	31
B-DOOR	SHAKER-2	39
B-DOOR	CURTAIN-2	26

B-DOOR	PAINT-AREA	50
B-DOOR	LOCKER-AREA	70
SHAKER-1	SHAKER-2	11
SHAKER-1	CURTAIN-2	43
SHAKER-1	PAINT-AREA	96
SHAKER-1	LOCKER-AREA	125
SHAKER-2	CURTAIN-2	51
SHAKER-2	PAINT-AREA	106
SHAKER-2	LOCKER-AREA	134
CURTAIN-2	PAINT-AREA	70
CURTAIN-2	LOCKER-AREA	80
PAINT-AREA	LOCKER-AREA	25

LAYOUTS AND MATERIAL FLOW



Name	Location		Body/Frag/PT
WORKPLACES:			
PAINT-OFFICE	65,0	6,5	
PAINT-STORAGE	65,5	6,5	
TOOL-ROOM	66,15	5,5	
THINNER-STORAGE	35,21	10,1	
POWER	46,0	4,1	
BOOTH-1	35,1	10,1	
BOOTH-3	17,1	10,1	
BOOTH-5	5,1	10,1	
BOOTH-2	35,19	10,1	
BOOTH-4	17,19	10,1	
BOOTH-6	5,19	10,1	
P-CLEANING	27,17	8,3	
P-MIXING	27,1	8,3	
LOCKERS	0,5	2,10	
FLAM-LIQUID	0,17	2,2	
TABLE	0,15	3,2	
PAINT-AREA	5,2	45,16	
P-DOOR	50,1	1,18	

TOOLS:		
STICK	P-CLEANING	
GLOVES	P-CLEANING	
SCREEN	P-CLEANING	
CRESENTWRENCH	OP	
SCREWDRIVER	OP	
PLIERS	OP	
RAG	OP	
OBJECTS:		
PAINT	PAINT-STORAGE	
BUTTON	POWER	
LEVER	BOOTH-6	FRAG
NOZZLE	BOOTH-6	FRAG
PAINTCAN-2	P-CLEANING	
SCREENTANK	P-CLEANING	
AIRHOSE	P-CLEANING	FRAG
PAINTCOVER	P-CLEANING	
WINGNUTS	P-CLEANING	FRAG
PAINT-POT	P-CLEANING	
COVER	P-CLEANING	
PAINTCAN	P-CLEANING	FRAG
PAINTCAN-1	P-CLEANING	
FILL-TUBE	P-MIXING	
AIRMIXER	P-MIXING	
THINNERTANK	P-MIXING	
MIXCAN	P-MIXING	
SPRAY-TIP	P-MIXING	
THINNERPAIL	P-MIXING	
SPRAYGUN	P-MIXING	FRAG
SCREW	P-MIXING	FRAG
FILTER-CAP	P-MIXING	
FILTER	P-MIXING	
INNER-FILTER	P-MIXING	
SYPHON-TUBE	P-MIXING	
S-HOLDER	P-MIXING	
RAG-1	P-MIXING	FRAG
DOLLY	P-MIXING	
OPERATORS:		
OP	PAINT-AREA	25.8 B

From	To	Steps
PAINT-OFFICE	PAINT-STORAGE	103

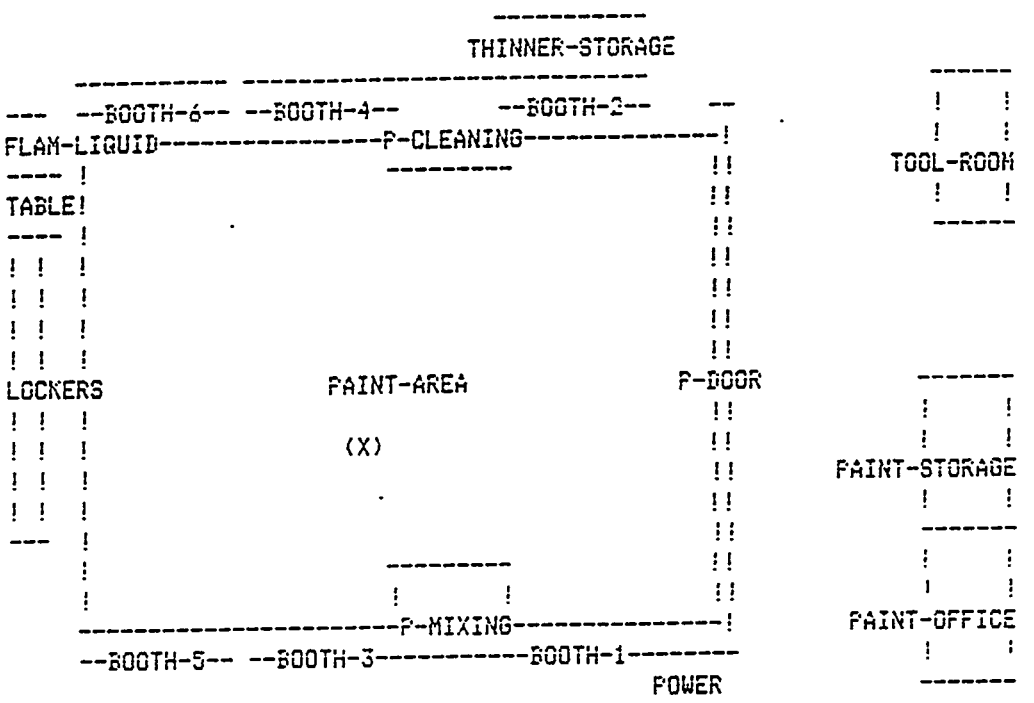
PAINT-OFFICE	TOOL-ROOM	233
PAINT-OFFICE	THINNER-STORAGE	123
PAINT-OFFICE	POWER	149
PAINT-OFFICE	BOOTH-1	147
PAINT-OFFICE	BOOTH-3	165
PAINT-OFFICE	BOOTH-5	167
PAINT-OFFICE	BOOTH-2	127
PAINT-OFFICE	BOOTH-4	153
PAINT-OFFICE	BOOTH-6	163
PAINT-OFFICE	P-CLEANING	135
PAINT-OFFICE	P-MIXING	153
PAINT-OFFICE	LOCKERS	169
PAINT-OFFICE	FLAM-LIQUID	170
PAINT-OFFICE	TABLE	169
PAINT-OFFICE	PAINT-AREA	153
PAINT-OFFICE	P-DOOR	120
PAINT-STORAGE	TOOL-ROOM	203
PAINT-STORAGE	THINNER-STORAGE	53
PAINT-STORAGE	POWER	63
PAINT-STORAGE	BOOTH-1	61
PAINT-STORAGE	BOOTH-3	63
PAINT-STORAGE	BOOTH-5	75
PAINT-STORAGE	BOOTH-2	43
PAINT-STORAGE	BOOTH-4	59
PAINT-STORAGE	BOOTH-6	73
PAINT-STORAGE	P-CLEANING	49
PAINT-STORAGE	P-MIXING	55
PAINT-STORAGE	LOCKERS	77
PAINT-STORAGE	FLAM-LIQUID	75
PAINT-STORAGE	TABLE	76
PAINT-STORAGE	PAINT-AREA	61
PAINT-STORAGE	P-DOOR	36
TOOL-ROOM	THINNER-STORAGE	217
TOOL-ROOM	POWER	233
TOOL-ROOM	BOOTH-1	231
TOOL-ROOM	BOOTH-3	237
TOOL-ROOM	BOOTH-5	255
TOOL-ROOM	BOOTH-2	219
TOOL-ROOM	BOOTH-4	231
TOOL-ROOM	BOOTH-6	250
TOOL-ROOM	P-CLEANING	225
TOOL-ROOM	P-MIXING	233
TOOL-ROOM	LOCKERS	263
TOOL-ROOM	FLAM-LIQUID	261
TOOL-ROOM	TABLE	262
TOOL-ROOM	PAINT-AREA	233
TOOL-ROOM	P-DOOR	236

THINNER-STORAGE	POWER	38
THINNER-STORAGE	BOOTH-1	38
THINNER-STORAGE	BOOTH-3	45
THINNER-STORAGE	BOOTH-5	55
THINNER-STORAGE	BOOTH-2	26
THINNER-STORAGE	BOOTH-4	40
THINNER-STORAGE	BOOTH-6	47
THINNER-STORAGE	P-CLEANING	33
THINNER-STORAGE	P-MIXING	39
THINNER-STORAGE	LOCKERS	58
THINNER-STORAGE	FLAM-LIQUID	56
THINNER-STORAGE	TABLE	57
THINNER-STORAGE	PAINT-AREA	36
THINNER-STORAGE	P-DOOR	28
POWER	BOOTH-1	14
POWER	BOOTH-3	29
POWER	BOOTH-5	39
POWER	BOOTH-2	27
POWER	BOOTH-4	33
POWER	BOOTH-6	43
POWER	P-CLEANING	30
POWER	P-MIXING	21
POWER	LOCKERS	44
POWER	FLAM-LIQUID	47
POWER	TABLE	46
POWER	PAINT-AREA	28
POWER	P-DOOR	15
BOOTH-1	BOOTH-3	18
BOOTH-1	BOOTH-5	28
BOOTH-1	BOOTH-2	23
BOOTH-1	BOOTH-4	29
BOOTH-1	BOOTH-6	33
BOOTH-1	P-CLEANING	25
BOOTH-1	P-MIXING	14
BOOTH-1	LOCKERS	35
BOOTH-1	FLAM-LIQUID	41
BOOTH-1	TABLE	39
BOOTH-1	PAINT-AREA	21
BOOTH-1	P-DOOR	17
BOOTH-3	BOOTH-5	18
BOOTH-3	BOOTH-2	29
BOOTH-3	BOOTH-4	23
BOOTH-3	BOOTH-6	26
BOOTH-3	P-CLEANING	26
BOOTH-3	P-MIXING	11
BOOTH-3	LOCKERS	21
BOOTH-3	FLAM-LIQUID	29

BOOTH-3	TABLE	26
BOOTH-3	PAINT-AREA	15
BOOTH-3	P-DOOR	29
BOOTH-5	BOOTH-2	33
BOOTH-5	BOOTH-4	26
BOOTH-5	BOOTH-6	23
BOOTH-5	P-CLEANING	30
BOOTH-5	P-MIXING	20
BOOTH-5	LOCKERS	16
BOOTH-5	FLAM-LIQUID	22
BOOTH-5	TABLE	19
BOOTH-5	PAINT-AREA	17
BOOTH-5	P-DOOR	37
BOOTH-2	BOOTH-4	18
BOOTH-2	BOOTH-6	28
BOOTH-2	P-CLEANING	13
BOOTH-2	P-MIXING	24
BOOTH-2	LOCKERS	34
BOOTH-2	FLAM-LIQUID	32
BOOTH-2	TABLE	33
BOOTH-2	PAINT-AREA	21
BOOTH-2	P-DOOR	17
BOOTH-4	BOOTH-6	13
BOOTH-4	P-CLEANING	11
BOOTH-4	P-MIXING	23
BOOTH-4	LOCKERS	22
BOOTH-4	FLAM-LIQUID	20
BOOTH-4	TABLE	21
BOOTH-4	PAINT-AREA	17
BOOTH-4	P-DOOR	20
BOOTH-6	P-CLEANING	21
BOOTH-6	P-MIXING	29
BOOTH-6	LOCKERS	15
BOOTH-6	FLAM-LIQUID	9
BOOTH-6	TABLE	11
BOOTH-6	PAINT-AREA	18
BOOTH-6	P-DOOR	38
P-CLEANING	P-MIXING	24
P-CLEANING	LOCKERS	29
P-CLEANING	FLAM-LIQUID	26
P-CLEANING	TABLE	27
P-CLEANING	PAINT-AREA	18
P-CLEANING	P-DOOR	23
P-MIXING	LOCKERS	26
P-MIXING	FLAM-LIQUID	32
P-MIXING	TABLE	29
P-MIXING	PAINT-AREA	18

P-MIXING	P-DOOR	33
LOCKERS	FLAM-LIQUID	14
LOCKERS	TABLE	9
LOCKERS	PAINT-AREA	19
LOCKERS	P-DOOR	43
FLAM-LIQUID	TABLE	9
FLAM-LIQUID	PAINT-AREA	20
FLAM-LIQUID	P-DOOR	46
TABLE	PAINT-AREA	19
TABLE	P-DOOR	45
PAINT-AREA	P-DOOR	27

LAYOUTS AND MATERIAL FLOW



Name	Location	Body/Fras/FT
WORKPLACES:		
PAINT-OFFICE	65,0	6,5
PAINT-STORAGE	65,5	6,5
TOOL-ROOM	66,15	5,5
THINNER-STORAGE	35,21	10,1
POWER	46,0	4,1
BOOTH-1	35,1	10,1
BOOTH-3	17,1	10,1
BOOTH-5	5,1	10,1
BOOTH-2	35,19	10,1
BOOTH-4	17,19	10,1
BOOTH-6	5,19	10,1
P-CLEANING	27,17	8,3
P-MIXING	27,1	8,3
LOCKERS	0,5	2,10
FLAM-LIQUID	0,17	2,2
TABLE	0,15	3,2
PAINT-AREA	5,2	45,16
P-DOOR	50,1	1,18

TOOLS:		
MIXCAN	P-CLEANING	
STICK	P-CLEANING	
GLOVES	P-CLEANING	
RAG	P-CLEANING	
SCREEN	P-CLEANING	
CRESENTWRENCH	P-CLEANING	
SPRAYGUN	LOCKERS	
SCREWDRIVER	OP	
PLIERS	OP	
OBJECTS:		
PAINT	PAINT-STORAGE	
BUTTON	POWER	
NOZZLE	BOOTH-6	FRAG
LEVER	BOOTH-6	FRAG
PAINTCAN-1	P-CLEANING	
PAINTCAN-2	P-CLEANING	
SCREENTANK	P-CLEANING	
AIRHOSE	P-CLEANING	FRAG
PAINTCOVER	P-CLEANING	
WINGNUTS	P-CLEANING	FRAG
PAINT-POT	P-CLEANING	
COVER	P-CLEANING	
PAINTCAN	P-CLEANING	FRAG
DOLLY	P-MIXING	
OPERATORS:		
OP	PAINT-AREA	25,S B

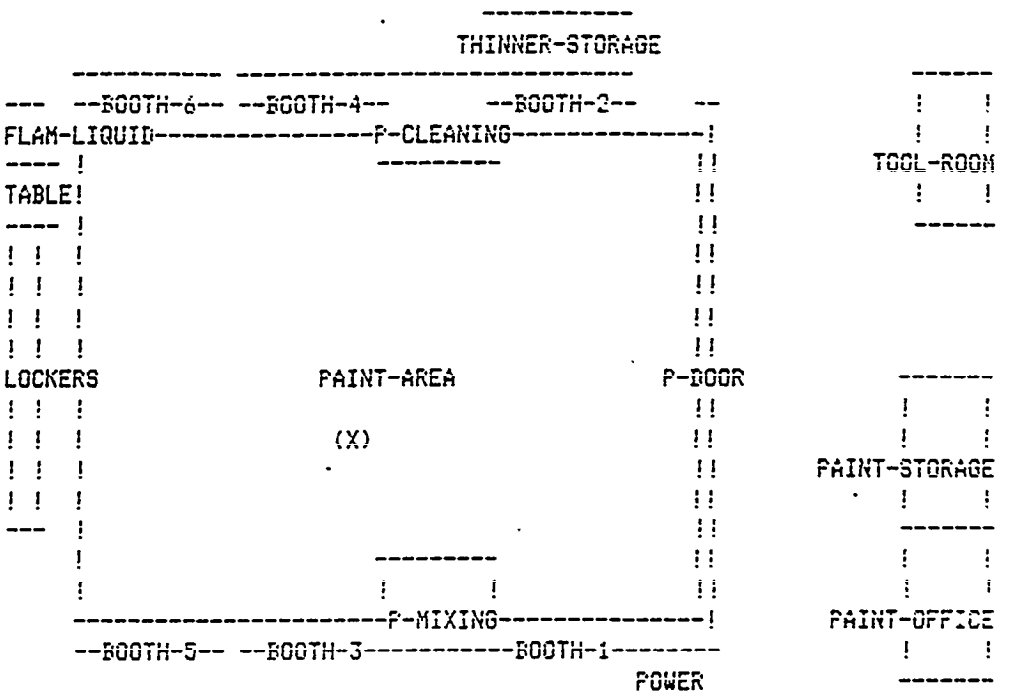
From	To	Steps
PAINT-OFFICE	PAINT-STORAGE	103
PAINT-OFFICE	TOOL-ROOM	233
PAINT-OFFICE	THINNER-STORAGE	123
PAINT-OFFICE	POWER	149.
PAINT-OFFICE	BOOTH-1	147
PAINT-OFFICE	BOOTH-3	165
PAINT-OFFICE	BOOTH-5	167
PAINT-OFFICE	BOOTH-2	127
PAINT-OFFICE	BOOTH-4	153
PAINT-OFFICE	BOOTH-6	163
PAINT-OFFICE	P-CLEANING	135
PAINT-OFFICE	P-MIXING	153
PAINT-OFFICE	LOCKERS	169

PAINT-OFFICE	FLAM-LIQUID	170
PAINT-OFFICE	TABLE	169
PAINT-OFFICE	PAINT-AREA	133
PAINT-OFFICE	P-DOOR	120
PAINT-STORAGE	TOOL-ROOM	203
PAINT-STORAGE	THINNER-STORAGE	53
PAINT-STORAGE	POWER	63
PAINT-STORAGE	BOOTH-1	61
PAINT-STORAGE	BOOTH-3	63
PAINT-STORAGE	BOOTH-5	75
PAINT-STORAGE	BOOTH-2	43
PAINT-STORAGE	BOOTH-4	59
PAINT-STORAGE	BOOTH-6	73
PAINT-STORAGE	P-CLEANING	49
PAINT-STORAGE	P-MIXING	55
PAINT-STORAGE	LOCKERS	77
PAINT-STORAGE	FLAM-LIQUID	75
PAINT-STORAGE	TABLE	76
PAINT-STORAGE	PAINT-AREA	61
PAINT-STORAGE	P-DOOR	36
TOOL-ROOM	THINNER-STORAGE	217
TOOL-ROOM	POWER	233
TOOL-ROOM	BOOTH-1	231
TOOL-ROOM	BOOTH-3	237
TOOL-ROOM	BOOTH-5	255
TOOL-ROOM	BOOTH-2	219
TOOL-ROOM	BOOTH-4	231
TOOL-ROOM	BOOTH-6	250
TOOL-ROOM	P-CLEANING	225
TOOL-ROOM	P-MIXING	233
TOOL-ROOM	LOCKERS	263
TOOL-ROOM	FLAM-LIQUID	261
TOOL-ROOM	TABLE	262
TOOL-ROOM	PAINT-AREA	233
TOOL-ROOM	P-DOOR	236
THINNER-STORAGE	POWER	38
THINNER-STORAGE	BOOTH-1	38
THINNER-STORAGE	BOOTH-3	45
THINNER-STORAGE	BOOTH-5	55
THINNER-STORAGE	BOOTH-2	26
THINNER-STORAGE	BOOTH-4	40
THINNER-STORAGE	BOOTH-6	47
THINNER-STORAGE	P-CLEANING	33
THINNER-STORAGE	P-MIXING	39
THINNER-STORAGE	LOCKERS	58
THINNER-STORAGE	FLAM-LIQUID	56
THINNER-STORAGE	TABLE	57

POWER	P-CLEANING	30
POWER	P-MIXING	21
POWER	LOCKERS	44
POWER	FLAM-LIQUID	47
POWER	TABLE	46
POWER	PAINT-AREA	28
POWER	P-DOOR	15
BOOTH-1	BOOTH-3	18
BOOTH-1	BOOTH-5	28
BOOTH-1	BOOTH-2	23
BOOTH-1	BOOTH-4	29
BOOTH-1	BOOTH-6	33
BOOTH-1	P-CLEANING	25
BOOTH-1	P-MIXING	14
BOOTH-1	LOCKERS	35
BOOTH-1	FLAM-LIQUID	41
BOOTH-1	TABLE	39
BOOTH-1	PAINT-AREA	21
BOOTH-1	P-DOOR	17
BOOTH-3	BOOTH-5	18
BOOTH-3	BOOTH-2	29
BOOTH-3	BOOTH-4	23
BOOTH-3	BOOTH-6	26
BOOTH-3	P-CLEANING	26
BOOTH-3	P-MIXING	11
BOOTH-3	LOCKERS	21
BOOTH-3	FLAM-LIQUID	29
BOOTH-3	TABLE	26
BOOTH-3	PAINT-AREA	15
BOOTH-3	P-DOOR	29
BOOTH-5	BOOTH-2	33
BOOTH-5	BOOTH-4	26
BOOTH-5	BOOTH-6	23
BOOTH-5	P-CLEANING	30
BOOTH-5	P-MIXING	20
BOOTH-5	LOCKERS	16
BOOTH-5	FLAM-LIQUID	22
BOOTH-5	TABLE	19
BOOTH-5	PAINT-AREA	17

BOOTH-5	P-DOOR	3?
BOOTH-2	BOOTH-4	18
BOOTH-2	BOOTH-6	28
BOOTH-2	P-CLEANING	13
BOOTH-2	P-MIXING	24
BOOTH-2	LOCKERS	34
BOOTH-2	FLAM-LIQUID	3?
BOOTH-2	TABLE	33
BOOTH-2	PAINT-AREA	21
BOOTH-2	P-DOOR	17
BOOTH-4	BOOTH-6	13
BOOTH-4	P-CLEANING	11
BOOTH-4	P-MIXING	23
BOOTH-4	LOCKERS	22
BOOTH-4	FLAM-LIQUID	20
BOOTH-4	TABLE	21
BOOTH-4	PAINT-AREA	17
BOOTH-4	P-DOOR	20
BOOTH-6	P-CLEANING	21
BOOTH-6	P-MIXING	29
BOOTH-6	LOCKERS	15
BOOTH-6	FLAM-LIQUID	9
BOOTH-6	TABLE	11
BOOTH-6	PAINT-AREA	18
BOOTH-6	P-DOOR	38
P-CLEANING	P-MIXING	24
P-CLEANING	LOCKERS	29
P-CLEANING	FLAM-LIQUID	26
P-CLEANING	TABLE	27
P-CLEANING	PAINT-AREA	18
P-CLEANING	P-DOOR	23
P-MIXING	LOCKERS	26
P-MIXING	FLAM-LIQUID	32
P-MIXING	TABLE	29
P-MIXING	PAINT-AREA	18
P-MIXING	P-DOOR	23
LOCKERS	FLAM-LIQUID	14
LOCKERS	TABLE	9
LOCKERS	PAINT-AREA	19
LOCKERS	P-DOOR	43
FLAM-LIQUID	TABLE	9
FLAM-LIQUID	PAINT-AREA	20
FLAM-LIQUID	P-DOOR	46
TABLE	PAINT-AREA	19
TABLE	P-DOOR	45
PAINT-AREA	P-DOOR	27

LAYOUTS AND MATERIAL FLOW



Name	Location		Body/Frag/PT
WORKPLACES:			
PAINT-OFFICE	65,0	6,5	
PAINT-STORAGE	65,5	6,5	
TOOL-ROOM	66,15	5,5	
THINNER-STORAGE	35,21	10,1	
POWER	46,0	4,1	
BOOTH-1	35,1	10,1	
BOOTH-3	17,1	10,1	
BOOTH-5	5,1	10,1	
BOOTH-2	35,19	10,1	
BOOTH-4	17,19	10,1	
BOOTH-6	5,19	10,1	
P-CLEANING	27,17	8,3	
P-MIXING	27,1	8,3	
LOCKERS	0,5	2,10	
FLAM-LIQUID	0,17	2,2	
TABLE	0,15	3,2	
PAINT-AREA	5,2	45,16	
P-DOOR	50,1	1,18	

TOOLS:

STICK	P-CLEANING	
GLOVES	P-CLEANING	
RAG	P-CLEANING	
SCREEN	P-CLEANING	
CRESENTWRENCH	P-CLEANING	
SPRAYGUN	LOCKERS	
SCREWDRIVER	OP	
PLIERS	OP	

OBJECTS:

PAINT	PAINT-STORAGE	
BUTTON	POWER	
NOZZLE	BOOTH-6	FRAG
LEVER	BOOTH-6	FRAG
PAINTCAN-1	P-CLEANING	
PAINTCAN-2	P-CLEANING	
SCREENTANK	P-CLEANING	
AIRHOSE	P-CLEANING	FRAG
PAINTCOVER	P-CLEANING	
WINGNUTS	P-CLEANING	FRAG
PAINT-POT	P-CLEANING	
COVER	P-CLEANING	
PAINTCAN	P-CLEANING	FRAG
DOLLY	P-MIXING	
AIRMIXER	P-MIXING	
THINNERTANK	P-MIXING	
MIXCAN	P-MIXING	

OPERATORS:

OP	PAINT-AREA	25,6 E

From	To	Steps
PAINT-OFFICE	PAINT-STORAGE	103
PAINT-OFFICE	TOOL-ROOM	233.
PAINT-OFFICE	THINNER-STORAGE	123
PAINT-OFFICE	POWER	149
PAINT-OFFICE	BOOTH-1	147
PAINT-OFFICE	BOOTH-3	165
PAINT-OFFICE	BOOTH-5	167
PAINT-OFFICE	BOOTH-2	127
PAINT-OFFICE	BOOTH-4	153
PAINT-OFFICE	BOOTH-6	163
PAINT-OFFICE	P-CLEANING	135

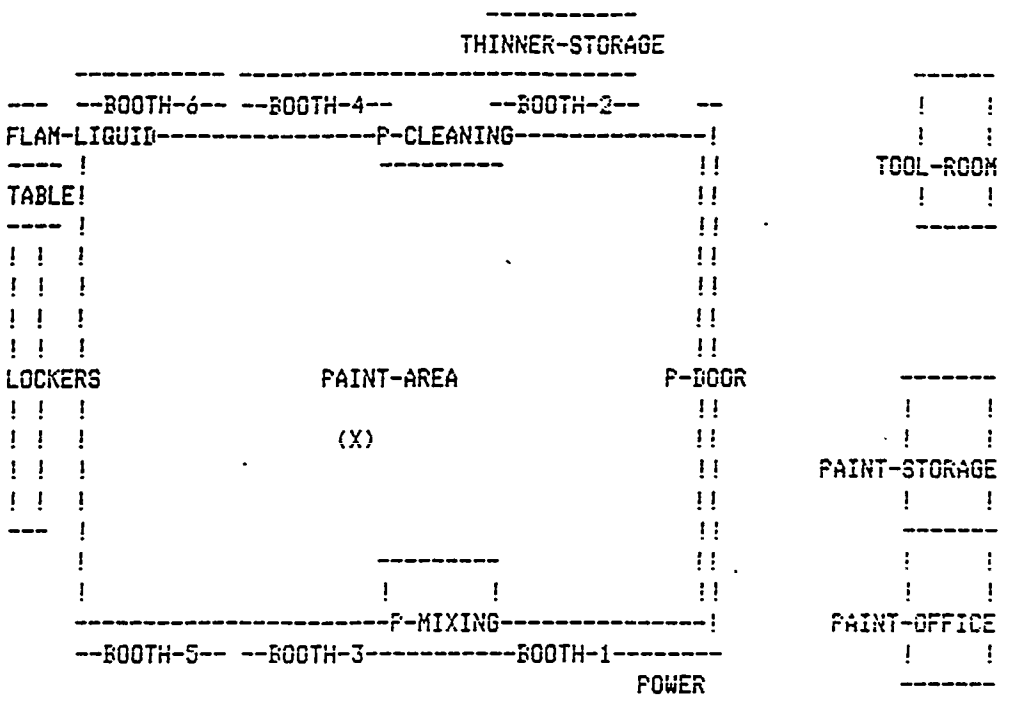
PAINT-OFFICE	P-MIXING	153
PAINT-OFFICE	LOCKERS	169
PAINT-OFFICE	FLAM-LIQUID	170
PAINT-OFFICE	TABLE	169
PAINT-OFFICE	PAINT-AREA	153
PAINT-OFFICE	P-DOOR	120
PAINT-STORAGE	TOOL-ROOM	203
PAINT-STORAGE	THINNER-STORAGE	53
PAINT-STORAGE	POWER	63
PAINT-STORAGE	BOOTH-1	61
PAINT-STORAGE	BOOTH-3	63
PAINT-STORAGE	BOOTH-5	75
PAINT-STORAGE	BOOTH-2	43
PAINT-STORAGE	BOOTH-4	59
PAINT-STORAGE	BOOTH-6	73
PAINT-STORAGE	P-CLEANING	49
PAINT-STORAGE	P-MIXING	55
PAINT-STORAGE	LOCKERS	77
PAINT-STORAGE	FLAM-LIQUID	75
PAINT-STORAGE	TABLE	76
PAINT-STORAGE	PAINT-AREA	61
PAINT-STORAGE	P-DOOR	36
TOOL-ROOM	THINNER-STORAGE	217
TOOL-ROOM	POWER	233
TOOL-ROOM	BOOTH-1	231
TOOL-ROOM	BOOTH-3	237
TOOL-ROOM	BOOTH-5	255
TOOL-ROOM	BOOTH-2	219
TOOL-ROOM	BOOTH-4	231
TOOL-ROOM	BOOTH-6	250
TOOL-ROOM	P-CLEANING	225
TOOL-ROOM	P-MIXING	233
TOOL-ROOM	LOCKERS	263
TOOL-ROOM	FLAM-LIQUID	261
TOOL-ROOM	TABLE	262
TOOL-ROOM	PAINT-AREA	233
TOOL-ROOM	P-DOOR	236
THINNER-STORAGE	POWER	38
THINNER-STORAGE	BOOTH-1	36
THINNER-STORAGE	BOOTH-3	45
THINNER-STORAGE	BOOTH-5	55
THINNER-STORAGE	BOOTH-2	26
THINNER-STORAGE	BOOTH-4	40
THINNER-STORAGE	BOOTH-6	47
THINNER-STORAGE	P-CLEANING	34
THINNER-STORAGE	P-MIXING	39
THINNER-STORAGE	LOCKERS	58

POWER	BOOTH-4	33
POWER	BOOTH-6	43
POWER	P-CLEANING	30
POWER	P-MIXING	21
POWER	LOCKERS	44
POWER	FLAM-LIQUID	47
POWER	TABLE	46
POWER	PAINT-AREA	26
POWER	P-DOOR	15
BOOTH-1	BOOTH-3	18
BOOTH-1	BOOTH-5	28
BOOTH-1	BOOTH-2	23
BOOTH-1	BOOTH-4	29
BOOTH-1	BOOTH-6	33
BOOTH-1	P-CLEANING	25
BOOTH-1	P-MIXING	14
BOOTH-1	LOCKERS	35
BOOTH-1	FLAM-LIQUID	41
BOOTH-1	TABLE	39
BOOTH-1	PAINT-AREA	21
BOOTH-1	P-DOOR	17
BOOTH-3	BOOTH-5	18
BOOTH-3	BOOTH-2	29
BOOTH-3	BOOTH-4	23
BOOTH-3	BOOTH-6	26
BOOTH-3	P-CLEANING	26
BOOTH-3	P-MIXING	11
BOOTH-3	LOCKERS	21
BOOTH-3	FLAM-LIQUID	29
BOOTH-3	TABLE	26
BOOTH-3	PAINT-AREA	15
BOOTH-3	P-DOOR	29
BOOTH-5	BOOTH-2	33
BOOTH-5	BOOTH-4	26
BOOTH-5	BOOTH-6	23
BOOTH-5	P-CLEANING	30
BOOTH-5	P-MIXING	20
BOOTH-5	LOCKERS	16
BOOTH-5	FLAM-LIQUID	22

BOOTH-5	TABLE	19
BOOTH-5	PAINT-AREA	17
BOOTH-5	P-DOOR	37
BOOTH-2	BOOTH-4	18
BOOTH-2	BOOTH-6	28
BOOTH-2	P-CLEANING	13
BOOTH-2	P-MIXING	24
BOOTH-2	LOCKERS	34
BOOTH-2	FLAM-LIQUID	32
BOOTH-2	TABLE	33
BOOTH-2	PAINT-AREA	21
BOOTH-2	P-DOOR	17
BOOTH-4	BOOTH-6	13
BOOTH-4	P-CLEANING	11
BOOTH-4	P-MIXING	23
BOOTH-4	LOCKERS	22
BOOTH-4	FLAM-LIQUID	20
BOOTH-4	TABLE	21
BOOTH-4	PAINT-AREA	17
BOOTH-4	P-DOOR	30
BOOTH-6	P-CLEANING	21
BOOTH-6	P-MIXING	29
BOOTH-6	LOCKERS	15
BOOTH-6	FLAM-LIQUID	9
BOOTH-6	TABLE	11
BOOTH-6	PAINT-AREA	18
BOOTH-6	P-DOOR	38
P-CLEANING	P-MIXING	24
P-CLEANING	LOCKERS	29
P-CLEANING	FLAM-LIQUID	26
P-CLEANING	TABLE	27
P-CLEANING	PAINT-AREA	18
P-CLEANING	P-DOOR	23
P-MIXING	LOCKERS	26
P-MIXING	FLAM-LIQUID	32
P-MIXING	TABLE	29
P-MIXING	PAINT-AREA	18
P-MIXING	P-DOOR	23
LOCKERS	FLAM-LIQUID	14
LOCKERS	TABLE	9
LOCKERS	PAINT-AREA	19
LOCKERS	P-DOOR	43
FLAM-LIQUID	TABLE	9
FLAM-LIQUID	PAINT-AREA	20
FLAM-LIQUID	P-DOOR	46
TABLE	PAINT-AREA	19
TABLE	P-DOOR	45

PAINT-AREA P-DOOR 27

LAYOUTS AND MATERIAL FLOW



Name	Location	Body/Fras/PT
WORKPLACES:		
PAINT-OFFICE	65,0	6,5
PAINT-STORAGE	65,5	6,5
TOOL-ROOM	66,15	5,5
THINNER-STORAGE	35,21	10,1
POWER	46,0	4,1
BOOTH-1	35,1	10,1
BOOTH-3	17,1	10,1
BOOTH-5	5,1	10,1
BOOTH-2	35,19	10,1
BOOTH-4	17,19	10,1
BOOTH-6	5,19	10,1
P-CLEANING	27,17	8,3
P-MIXING	27,1	8,3
LOCKERS	0,5	2,10
FLAM-LIQUID	0,17	2,2
TABLE	0,15	3,2
PAINT-AREA	5,2	45,16
P-DOOR	50,1	1,18

TOOLS:	
MIXCAN	P-CLEANING
STICK	P-CLEANING
GLOVES	P-CLEANING
RAG	P-CLEANING
SCREEN	P-CLEANING
AIRHOSE	P-CLEANING
SPRAYGUN	LOCKERS
PLIERS	OP
SCREWDRIVER	OP
OBJECTS:	
PAINT	PAINT-STORAGE
BUTTON	POWER
PAINTCOVER	P-CLEANING
PAINTCAN	P-CLEANING
PAINTCAN-1	P-CLEANING
PAINTCAN-2	P-CLEANING
SCREENTANK	P-CLEANING
OPERATORS:	
OP	PAINT-AREA 25,8 B

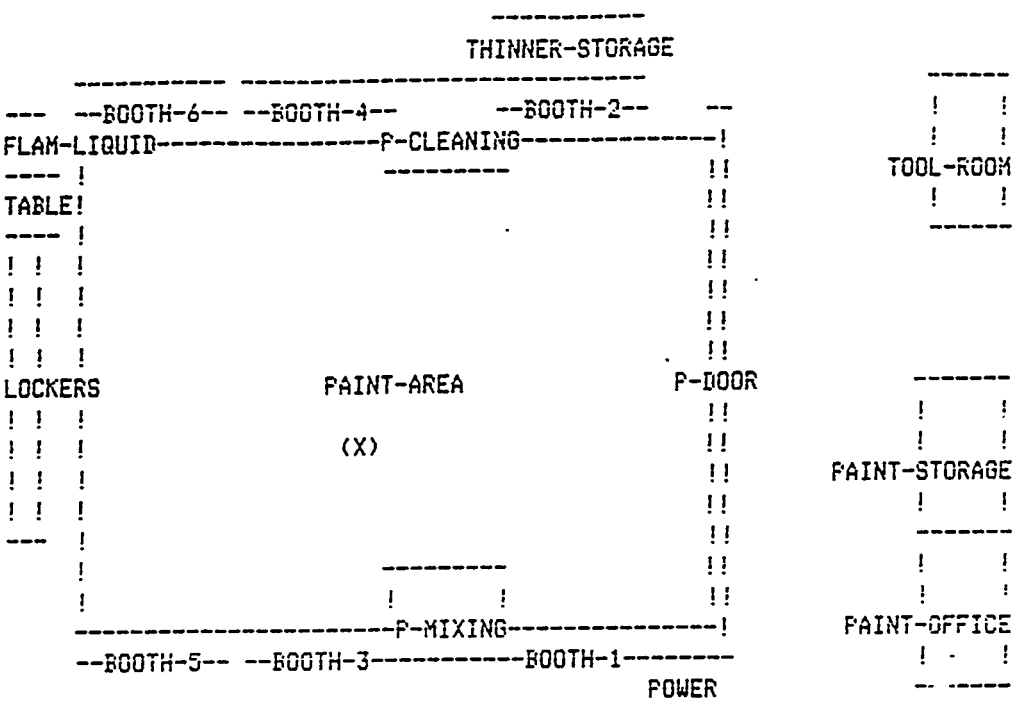
From	To	Steps
PAINT-OFFICE	PAINT-STORAGE	103
PAINT-OFFICE	TOOL-ROOM	233
PAINT-OFFICE	THINNER-STORAGE	123
PAINT-OFFICE	POWER	149
PAINT-OFFICE	BOOTH-1	147
PAINT-OFFICE	BOOTH-3	165
PAINT-OFFICE	BOOTH-5	167
PAINT-OFFICE	BOOTH-2	127
PAINT-OFFICE	BOOTH-4	153
PAINT-OFFICE	BOOTH-6	163
PAINT-OFFICE	P-CLEANING	135
PAINT-OFFICE	P-MIXING	153
PAINT-OFFICE	LOCKERS	169
PAINT-OFFICE	FLAM-LIQUID	170
PAINT-OFFICE	TABLE	169
PAINT-OFFICE	PAINT-AREA	153
PAINT-OFFICE	P-DOOR	120
PAINT-STORAGE	TOOL-ROOM	203
PAINT-STORAGE	THINNER-STORAGE	53
PAINT-STORAGE	POWER	63

PAINT-STORAGE	BOOTH-1	61
PAINT-STORAGE	BOOTH-3	63
PAINT-STORAGE	BOOTH-5	75
PAINT-STORAGE	BOOTH-2	43
PAINT-STORAGE	BOOTH-4	59
PAINT-STORAGE	BOOTH-6	73
PAINT-STORAGE	P-CLEANING	49
PAINT-STORAGE	P-MIXING	55
PAINT-STORAGE	LOCKERS	77
PAINT-STORAGE	FLAM-LIQUID	75
PAINT-STORAGE	TABLE	76
PAINT-STORAGE	PAINT-AREA	61
PAINT-STORAGE	P-DOOR	36
TOOL-ROOM	THINNER-STORAGE	217
TOOL-ROOM	POWER	233
TOOL-ROOM	BOOTH-1	231
TOOL-ROOM	BOOTH-3	237
TOOL-ROOM	BOOTH-5	253
TOOL-ROOM	BOOTH-2	219
TOOL-ROOM	BOOTH-4	231
TOOL-ROOM	BOOTH-6	250
TOOL-ROOM	P-CLEANING	225
TOOL-ROOM	P-MIXING	233
TOOL-ROOM	LOCKERS	263
TOOL-ROOM	FLAM-LIQUID	261
TOOL-ROOM	TABLE	262
TOOL-ROOM	PAINT-AREA	233
TOOL-ROOM	P-DOOR	236
THINNER-STORAGE	POWER	38
THINNER-STORAGE	BOOTH-1	38
THINNER-STORAGE	BOOTH-3	45
THINNER-STORAGE	BOOTH-5	55
THINNER-STORAGE	BOOTH-2	24
THINNER-STORAGE	BOOTH-4	40
THINNER-STORAGE	BOOTH-6	47
THINNER-STORAGE	P-CLEANING	33
THINNER-STORAGE	P-MIXING	39
THINNER-STORAGE	LOCKERS	58
THINNER-STORAGE	FLAM-LIQUID	56
THINNER-STORAGE	TABLE	57
THINNER-STORAGE	PAINT-AREA	36
THINNER-STORAGE	P-DOOR	28
POWER	BOOTH-1	14
POWER	BOOTH-3	29
POWER	BOOTH-5	39
POWER	BOOTH-2	27
POWER	BOOTH-4	33

POWER	BOOTH-6	43
POWER	P-CLEANING	30
POWER	P-MIXING	21
POWER	LOCKERS	44
POWER	FLAM-LIQUID	47
POWER	TABLE	46
POWER	PAINT-AREA	28
POWER	P-DOOR	15
BOOTH-1	BOOTH-3	18
BOOTH-1	BOOTH-5	28
BOOTH-1	BOOTH-2	23
BOOTH-1	BOOTH-4	29
BOOTH-1	BOOTH-6	33
BOOTH-1	P-CLEANING	25
BOOTH-1	P-MIXING	14
BOOTH-1	LOCKERS	35
BOOTH-1	FLAM-LIQUID	41
BOOTH-1	TABLE	38
BOOTH-1	PAINT-AREA	21
BOOTH-1	P-DOOR	17
BOOTH-3	BOOTH-5	16
BOOTH-3	BOOTH-2	29
BOOTH-3	BOOTH-4	23
BOOTH-3	BOOTH-6	26
BOOTH-3	P-CLEANING	26
BOOTH-3	P-MIXING	11
BOOTH-3	LOCKERS	21
BOOTH-3	FLAM-LIQUID	29
BOOTH-3	TABLE	26
BOOTH-3	PAINT-AREA	15
BOOTH-3	P-DOOR	29
BOOTH-5	BOOTH-2	33
BOOTH-5	BOOTH-4	26
BOOTH-5	BOOTH-6	23
BOOTH-5	P-CLEANING	30
BOOTH-5	P-MIXING	20
BOOTH-5	LOCKERS	16
BOOTH-5	FLAM-LIQUID	22
BOOTH-5	TABLE	19
BOOTH-5	PAINT-AREA	17
BOOTH-5	P-DOOR	37
BOOTH-2	BOOTH-4	18
BOOTH-2	BOOTH-6	28
BOOTH-2	P-CLEANING	13
BOOTH-2	P-MIXING	24
BOOTH-2	LOCKERS	34
BOOTH-2	FLAM-LIQUID	32

BOOTH-2	TABLE	33
BOOTH-2	PAINT-AREA	21
BOOTH-2	P-DOOR	17
BOOTH-4	BOOTH-6	13
BOOTH-4	P-CLEANING	11
BOOTH-4	P-MIXING	23
BOOTH-4	LOCKERS	22
BOOTH-4	FLAM-LIQUID	20
BOOTH-4	TABLE	21
BOOTH-4	PAINT-AREA	17
BOOTH-4	P-DOOR	20
BOOTH-6	P-CLEANING	21
BOOTH-6	P-MIXING	29
BOOTH-6	LOCKERS	15
BOOTH-6	FLAM-LIQUID	9
BOOTH-6	TABLE	11
BOOTH-6	PAINT-AREA	18
BOOTH-6	P-DOOR	38
P-CLEANING	P-MIXING	24
P-CLEANING	LOCKERS	27
P-CLEANING	FLAM-LIQUID	26
P-CLEANING	TABLE	27
P-CLEANING	PAINT-AREA	18
P-CLEANING	P-DOOR	23
P-MIXING	LOCKERS	26
P-MIXING	FLAM-LIQUID	32
P-MIXING	TABLE	29
P-MIXING	PAINT-AREA	18
P-MIXING	P-DOOR	23
LOCKERS	FLAM-LIQUID	14
LOCKERS	TABLE	9
LOCKERS	PAINT-AREA	19
LOCKERS	P-DOOR	43
FLAM-LIQUID	TABLE	9
FLAM-LIQUID	PAINT-AREA	20
FLAM-LIQUID	P-DOOR	46
TABLE	PAINT-AREA	19
TABLE	P-DOOR	45
PAINT-AREA	P-DOOR	27

LAYOUTS AND MATERIAL FLOW



Name	Location		Body/Fras/PT
WORKPLACES:			
PAINT-OFFICE	65,0	6,5	
PAINT-STORAGE	65,5	6,5	
TOOL-ROOM	66,15	5,5	
THINNER-STORAGE	35,21	10,1	
POWER	46,0	4,1	
BOOTH-1	35,1	10,1	
BOOTH-3	17,1	10,1	
BOOTH-5	5,1	10,1	
BOOTH-2	35,19	10,1	
BOOTH-4	17,19	10,1	
BOOTH-6	5,19	10,1	
P-CLEANING	27,17	8,3	
P-MIXING	27,1	8,3	
LOCKERS	0,5	2,10	
FLAM-LIQUID	0,17	2,2	
TABLE	0,15	3,2	
PAINT-AREA	5,2	45,16	
P-DOOR	50,1	1,18	

TOOLS:		
STICK	P-CLEANING	
GLOVES	P-CLEANING	
SCREEN	P-CLEANING	
CRESENTWRENCH	OP	
SCREWDRIVER	OP	
PLIERS	OP	
RAG	OP	
OBJECTS:		
PAINT	PAINT-STORAGE	
BUTTON	POWER	
NOZZLE	BOOTH-6	FRAG
WOODEN-BUCK	BOOTH-6	
2X4-BOARD	BOOTH-6	
LEVER	P-CLEANING	FRAG
AIRHOSE	P-CLEANING	FRAG
PAINTCOVER	P-CLEANING	
WINGNUTS	P-CLEANING	FRAG
PAINT-POT	P-CLEANING	
COVER	P-CLEANING	
PAINTCAN	P-CLEANING	FRAG
PAINTCAN-1	P-CLEANING	
PAINTCAN-2	P-CLEANING	
SCREENTANK	P-CLEANING	
SPRAY-TIP	P-CLEANING	
SPRAYGUN	P-CLEANING	FRAG
NUT	P-CLEANING	
THINNER	P-CLEANING	
MIXCAN	P-MIXING	
SCREW	P-MIXING	FRAG
FILTER-CAP	P-MIXING	
FILTER	P-MIXING	
INNER-FILTER	P-MIXING	
SYPHON-TUBE	P-MIXING	
S-HOLDER	P-MIXING	
RAG-1	P-MIXING	FRAG
DOLLY	P-MIXING	
FILL-TUBE	P-MIXING	
AIRMIXER	P-MIXING	
THINNERTANK	P-MIXING	
THINNERPAIL	P-MIXING	
COVERALLS	LOCKERS	
PARTS-BOX	TABLE	
4'X8'-PANEL	TABLE	
PARTS	PAINT-AREA	

OPERATORS:
OF PAINT-AREA 25.6 B

From	To	Steps
PAINT-OFFICE	PAINT-STORAGE	103
PAINT-OFFICE	TOOL-ROOM	233
PAINT-OFFICE	THINNER-STORAGE	123
PAINT-OFFICE	POWER	149
PAINT-OFFICE	BOOTH-1	147
PAINT-OFFICE	BOOTH-3	165
PAINT-OFFICE	BOOTH-5	167
PAINT-OFFICE	BOOTH-2	127
PAINT-OFFICE	BOOTH-4	153
PAINT-OFFICE	BOOTH-6	163
PAINT-OFFICE	P-CLEANING	135
PAINT-OFFICE	P-MIXING	153
PAINT-OFFICE	LOCKERS	167
PAINT-OFFICE	FLAM-LIQUID	170
PAINT-OFFICE	TABLE	169
PAINT-OFFICE	PAINT-AREA	153
PAINT-OFFICE	P-DOOR	120
PAINT-STORAGE	TOOL-ROOM	203
PAINT-STORAGE	THINNER-STORAGE	53
PAINT-STORAGE	POWER	63
PAINT-STORAGE	BOOTH-1	61
PAINT-STORAGE	BOOTH-3	63
PAINT-STORAGE	BOOTH-5	75
PAINT-STORAGE	BOOTH-2	43
PAINT-STORAGE	BOOTH-4	59
PAINT-STORAGE	BOOTH-6	73
PAINT-STORAGE	P-CLEANING	49
PAINT-STORAGE	P-MIXING	55
PAINT-STORAGE	LOCKERS	77
PAINT-STORAGE	FLAM-LIQUID	75
PAINT-STORAGE	TABLE	76
PAINT-STORAGE	PAINT-AREA	61
PAINT-STORAGE	P-DOOR	36
TOOL-ROOM	THINNER-STORAGE	217
TOOL-ROOM	POWER	233
TOOL-ROOM	BOOTH-1	231
TOOL-ROOM	BOOTH-3	237
TOOL-ROOM	BOOTH-5	255
TOOL-ROOM	BOOTH-2	219
TOOL-ROOM	BOOTH-4	231

TOOL-ROOM	BOOTH-6	250
TOOL-ROOM	P-CLEANING	225
TOOL-ROOM	P-MIXING	233
TOOL-ROOM	LOCKERS	263
TOOL-ROOM	FLAM-LIQUID	261
TOOL-ROOM	TABLE	262
TOOL-ROOM	PAINT-AREA	233
TOOL-ROOM	P-DOOR	236
THINNER-STORAGE	POWER	38
THINNER-STORAGE	BOOTH-1	38
THINNER-STORAGE	BOOTH-3	45
THINNER-STORAGE	BOOTH-5	55
THINNER-STORAGE	BOOTH-2	26
THINNER-STORAGE	BOOTH-4	40
THINNER-STORAGE	BOOTH-6	47
THINNER-STORAGE	P-CLEANING	33
THINNER-STORAGE	P-MIXING	39
THINNER-STORAGE	LOCKERS	58
THINNER-STORAGE	FLAM-LIQUID	56
THINNER-STORAGE	TABLE	57
THINNER-STORAGE	PAINT-AREA	36
THINNER-STORAGE	P-DOOR	28
POWER	BOOTH-1	14
POWER	BOOTH-3	29
POWER	BOOTH-5	39
POWER	BOOTH-2	27
POWER	BOOTH-4	33
POWER	BOOTH-6	43
POWER	P-CLEANING	30
POWER	P-MIXING	21
POWER	LOCKERS	44
POWER	FLAM-LIQUID	47
POWER	TABLE	46
POWER	PAINT-AREA	28
POWER	P-DOOR	15
BOOTH-1	BOOTH-3	18
BOOTH-1	BOOTH-5	28
BOOTH-1	BOOTH-2	23
BOOTH-1	BOOTH-4	29
BOOTH-1	BOOTH-6	33
BOOTH-1	P-CLEANING	25
BOOTH-1	P-MIXING	14
BOOTH-1	LOCKERS	35
BOOTH-1	FLAM-LIQUID	41
BOOTH-1	TABLE	39
BOOTH-1	PAINT-AREA	21
BOOTH-1	P-DOOR	17

BOOTH-3	BOOTH-5	18
BOOTH-3	BOOTH-2	29
BOOTH-3	BOOTH-4	23
BOOTH-3	BOOTH-6	2e
BOOTH-3	P-CLEANING	26
BOOTH-3	P-MIXING	11
BOOTH-3	LOCKERS	21
BOOTH-3	FLAM-LIQUID	29
BOOTH-3	TABLE	26
BOOTH-3	PAINT-AREA	15
BOOTH-3	P-DOOR	29
BOOTH-5	BOOTH-2	33
BOOTH-5	BOOTH-4	26
BOOTH-5	BOOTH-6	23
BOOTH-5	P-CLEANING	30
BOOTH-5	P-MIXING	20
BOOTH-5	LOCKERS	16
BOOTH-5	FLAM-LIQUID	22
BOOTH-5	TABLE	19
BOOTH-5	PAINT-AREA	17
BOOTH-5	P-DOOR	37
BOOTH-2	BOOTH-4	18
BOOTH-2	BOOTH-6	28
BOOTH-2	P-CLEANING	13
BOOTH-2	P-MIXING	24
BOOTH-2	LOCKERS	34
BOOTH-2	FLAM-LIQUID	32
BOOTH-2	TABLE	33
BOOTH-2	PAINT-AREA	21
BOOTH-2	P-DOOR	17
BOOTH-4	BOOTH-6	13
BOOTH-4	P-CLEANING	11
BOOTH-4	P-MIXING	23
BOOTH-4	LOCKERS	22
BOOTH-4	FLAM-LIQUID	20
BOOTH-4	TABLE	21
BOOTH-4	PAINT-AREA	17
BOOTH-4	P-DOOR	20
BOOTH-6	P-CLEANING	21
BOOTH-6	P-MIXING	29
BOOTH-6	LOCKERS	15
BOOTH-6	FLAM-LIQUID	9
BOOTH-6	TABLE	11
BOOTH-6	PAINT-AREA	18
BOOTH-6	P-DOOR	38
P-CLEANING	P-MIXING	24
P-CLEANING	LOCKERS	29

P-CLEANING	FLAM-LIQUID	26
P-CLEANING	TABLE	27
P-CLEANING	PAINT-AREA	18
P-CLEANING	P-DOOR	23
P-MIXING	LOCKERS	26
P-MIXING	FLAM-LIQUID	32
P-MIXING	TABLE	29
P-MIXING	PAINT-AREA	18
P-MIXING	P-DOOR	23
LOCKERS	FLAM-LIQUID	14
LOCKERS	TABLE	9
LOCKERS	PAINT-AREA	19
LOCKERS	P-DOOR	43
FLAM-LIQUID	TABLE	9
FLAM-LIQUID	PAINT-AREA	20
FLAM-LIQUID	P-DOOR	46
TABLE	PAINT-AREA	19
TABLE	P-DOOR	45
PAINT-AREA	P-DOOR	27

TOOLS:		
STICK	P-CLEANING	
GLOVES	P-CLEANING	
SCREEN	P-CLEANING	
CRESENTWRENCH	OP	
SCREWDRIVER	OP	
PLIERS	OP	
RAG	OP	
OBJECTS:		
PAINT	PAINT-STORAGE	
BUTTON	POWER	
NOZZLE	BOOTH-6	FRAG
WOODEN-BUCK	BOOTH-6	
2X4-BOARD	BOOTH-6	
LEVER	P-CLEANING	FRAG
AIRHOSE	P-CLEANING	FRAG
PAINTCOVER	P-CLEANING	
WINGNUTS	P-CLEANING	FRAG
PAINT-POT	P-CLEANING	
COVER	P-CLEANING	
PAINTCAN	P-CLEANING	FRAG
PAINTCAN-1	P-CLEANING	
PAINTCAN-2	P-CLEANING	
SCREENTANK	P-CLEANING	
SPRAY-TIP	P-CLEANING	
SPRAYGUN	P-CLEANING	FRAG
NUT	P-CLEANING	
THINNER	P-CLEANING	
MIXCAN	P-MIXING	
SCREW	P-MIXING	FRAG
FILTER-CAP	P-MIXING	
FILTER	P-MIXING	
INNER-FILTER	P-MIXING	
SYPHON-TUBE	P-MIXING	
S-HOLDER	P-MIXING	
RAG-1	P-MIXING	FRAG
DOLLY	P-MIXING	
FILL-TUBE	P-MIXING	
AIRMIXER	P-MIXING	
THINNERTANK	P-MIXING	
THINNERPAIL	P-MIXING	
COVERALLS	LOCKER-AREA	
TAPE	LOCKER-AREA	FRAG
ZIPPER	LOCKER-AREA	
LOCKER	LOCKER-AREA	
PARTS-BOX	TABLE	

4'X8'-PANEL	TABLE	
SECTION	PAINT-AREA	
PARTS	PAINT-AREA	

OPERATORS:

OP	PAINT-AREA	25.8 B

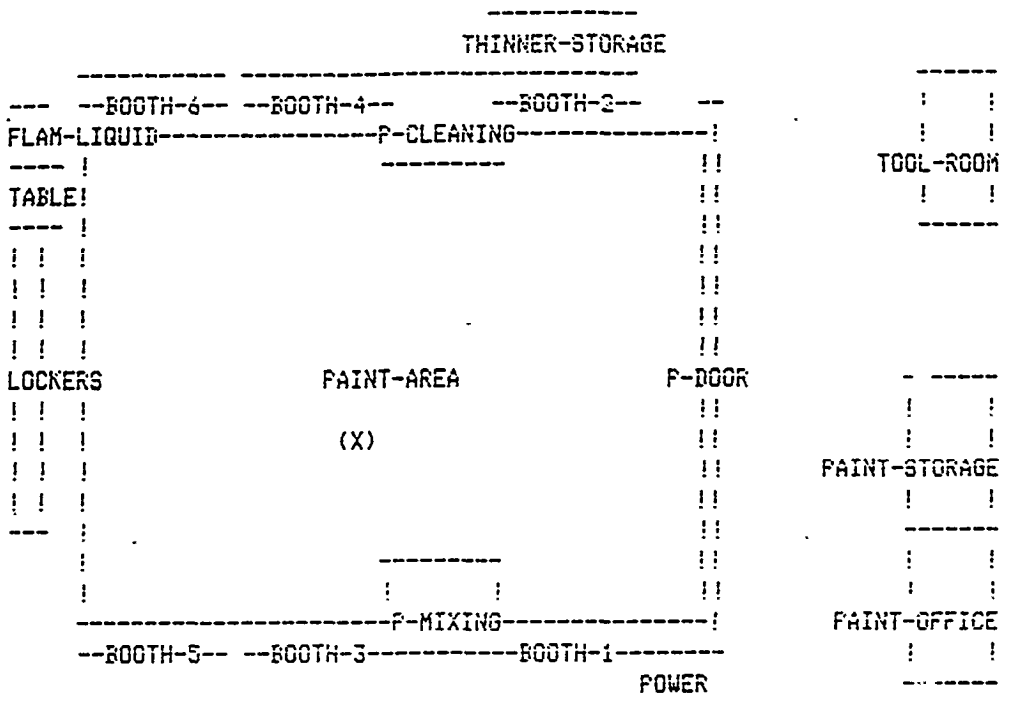
From	To	Steps
PAINT-OFFICE	PAINT-STORAGE	103
PAINT-OFFICE	TOOL-ROOM	233
PAINT-OFFICE	THINNER-STORAGE	123
PAINT-OFFICE	POWER	149
PAINT-OFFICE	BOOTH-1	147
PAINT-OFFICE	BOOTH-3	165
PAINT-OFFICE	BOOTH-5	167
PAINT-OFFICE	BOOTH-2	127
PAINT-OFFICE	BOOTH-4	153
PAINT-OFFICE	BOOTH-6	163
PAINT-OFFICE	P-CLEANING	135
PAINT-OFFICE	P-MIXING	153
PAINT-OFFICE	LOCKER-AREA	169
PAINT-OFFICE	FLAM-LIQUID	170
PAINT-OFFICE	TABLE	169
PAINT-OFFICE	PAINT-AREA	153
PAINT-OFFICE	P-DOOR	120
PAINT-STORAGE	TOOL-ROOM	203
PAINT-STORAGE	THINNER-STORAGE	53
PAINT-STORAGE	POWER	63
PAINT-STORAGE	BOOTH-1	61
PAINT-STORAGE	BOOTH-3	63
PAINT-STORAGE	BOOTH-5	75
PAINT-STORAGE	BOOTH-2	43
PAINT-STORAGE	BOOTH-4	59
PAINT-STORAGE	BOOTH-6	73
PAINT-STORAGE	P-CLEANING	49.
PAINT-STORAGE	P-MIXING	55
PAINT-STORAGE	LOCKER-AREA	77
PAINT-STORAGE	FLAM-LIQUID	75
PAINT-STORAGE	TABLE	76
PAINT-STORAGE	PAINT-AREA	61
PAINT-STORAGE	P-DOOR	36
TOOL-ROOM	THINNER-STORAGE	217
TOOL-ROOM	POWER	233
TOOL-ROOM	BOOTH-1	231

TOOL-ROOM	BOOTH-3	237
TOOL-ROOM	BOOTH-5	253
TOOL-ROOM	BOOTH-2	219
TOOL-ROOM	BOOTH-4	231
TOOL-ROOM	BOOTH-6	250
TOOL-ROOM	P-CLEANING	225
TOOL-ROOM	P-MIXING	243
TOOL-ROOM	LOCKER-AREA	263
TOOL-ROOM	FLAM-LIQUID	261
TOOL-ROOM	TABLE	262
TOOL-ROOM	PAINT-AREA	243
TOOL-ROOM	P-DOOR	236
THINNER-STORAGE	POWER	38
THINNER-STORAGE	BOOTH-1	38
THINNER-STORAGE	BOOTH-3	45
THINNER-STORAGE	BOOTH-5	55
THINNER-STORAGE	BOOTH-2	26
THINNER-STORAGE	BOOTH-4	40
THINNER-STORAGE	BOOTH-6	47
THINNER-STORAGE	P-CLEANING	33
THINNER-STORAGE	P-MIXING	3?
THINNER-STORAGE	LOCKER-AREA	58
THINNER-STORAGE	FLAM-LIQUID	56
THINNER-STORAGE	TABLE	57
THINNER-STORAGE	PAINT-AREA	36
THINNER-STORAGE	P-DOOR	28
POWER	BOOTH-1	14
POWER	BOOTH-3	29
POWER	BOOTH-5	39
POWER	BOOTH-2	27
POWER	BOOTH-4	3?
POWER	BOOTH-6	43
POWER	P-CLEANING	3?
POWER	P-MIXING	21
POWER	LOCKER-AREA	4?
POWER	FLAM-LIQUID	47
POWER	TABLE	48
POWER	PAINT-AREA	28
POWER	P-DOOR	15
BOOTH-1	BOOTH-3	18
BOOTH-1	BOOTH-5	28
BOOTH-1	BOOTH-2	23
BOOTH-1	BOOTH-4	29
BOOTH-1	BOOTH-6	33
BOOTH-1	P-CLEANING	25
BOOTH-1	P-MIXING	14
BOOTH-1	LOCKER-AREA	3?

BOOTH-1	FLAM-LIQUID	41
BOOTH-1	TABLE	39
BOOTH-1	PAINT-AREA	21
BOOTH-1	P-DOOR	17
BOOTH-3	BOOTH-5	18
BOOTH-3	BOOTH-2	29
BOOTH-3	BOOTH-4	23
BOOTH-3	BOOTH-6	26
BOOTH-3	P-CLEANING	26
BOOTH-3	P-MIXING	11
BOOTH-3	LOCKER-AREA	21
BOOTH-3	FLAM-LIQUID	29
BOOTH-3	TABLE	26
BOOTH-3	PAINT-AREA	15
BOOTH-3	P-DOOR	29
BOOTH-5	BOOTH-2	33
BOOTH-5	BOOTH-4	26
BOOTH-5	BOOTH-6	23
BOOTH-5	P-CLEANING	30
BOOTH-5	P-MIXING	20
BOOTH-5	LOCKER-AREA	16
BOOTH-5	FLAM-LIQUID	22
BOOTH-5	TABLE	19
BOOTH-5	PAINT-AREA	17
BOOTH-5	P-DOOR	37
BOOTH-2	BOOTH-4	18
BOOTH-2	BOOTH-6	28
BOOTH-2	P-CLEANING	13
BOOTH-2	P-MIXING	24
BOOTH-2	LOCKER-AREA	34
BOOTH-2	FLAM-LIQUID	32
BOOTH-2	TABLE	33
BOOTH-2	PAINT-AREA	21
BOOTH-2	P-DOOR	17
BOOTH-4	BOOTH-6	13
BOOTH-4	P-CLEANING	11
BOOTH-4	P-MIXING	23
BOOTH-4	LOCKER-AREA	22
BOOTH-4	FLAM-LIQUID	20
BOOTH-4	TABLE	21
BOOTH-4	PAINT-AREA	17
BOOTH-4	P-DOOR	20
BOOTH-6	P-CLEANING	21
BOOTH-6	P-MIXING	29
BOOTH-6	LOCKER-AREA	15
BOOTH-6	FLAM-LIQUID	9
BOOTH-6	TABLE	11

BOOTH-6	PAINT-AREA	18
BOOTH-6	P-DOOR	38
P-CLEANING	P-MIXING	24
P-CLEANING	LOCKER-AREA	29
P-CLEANING	FLAM-LIQUID	26
P-CLEANING	TABLE	27
P-CLEANING	PAINT-AREA	18
P-CLEANING	P-DOOR	23
P-MIXING	LOCKER-AREA	26
P-MIXING	FLAM-LIQUID	32
P-MIXING	TABLE	29
P-MIXING	PAINT-AREA	18
P-MIXING	P-DOOR	23
LOCKER-AREA	FLAM-LIQUID	14
LOCKER-AREA	TABLE	9
LOCKER-AREA	PAINT-AREA	19
LOCKER-AREA	P-DOOR	43
FLAM-LIQUID	TABLE	9
FLAM-LIQUID	PAINT-AREA	20
FLAM-LIQUID	P-DOOR	46
TABLE	PAINT-AREA	19
TABLE	P-DOOR	45
PAINT-AREA	P-DOOR	27

LAYOUTS AND MATERIAL FLOW



Name	Location	Body/Fras/PT
WORKPLACES:		
PAINT-OFFICE	65,0	6,5
PAINT-STORAGE	65,5	6,5
TOOL-ROOM	66,15	5,5
THINNER-STORAGE	35,21	10,1
POWER	46,0	4,1
BOOTH-1	35,1	10,1
BOOTH-3	17,1	10,1
BOOTH-5	5,1	10,1
BOOTH-2	35,19	10,1
BOOTH-4	17,19	10,1
BOOTH-6	5,19	10,1
P-CLEANING	27,17	8,3
P-MIXING	27,1	8,3
LOCKERS	0,5	2,10
FLAM-LIQUID	0,17	2,2
TABLE	0,15	3,2
PAINT-AREA	5,2	45,16
P-DOOR	50,1	1,18

TOOLS:		
STICK	P-CLEANING	
GLOVES	P-CLEANING	
SCREEN	P-CLEANING	
CRESENTWRENCH	OP	
SCREWDRIVER	OP	
PLIERS	OP	
RAG	OP	
OBJECTS:		
PAINT	PAINT-STORAGE	
BUTTON	POWER	
LEVER	BOOTH-6	FRAG
NOZZLE	BOOTH-6	FRAG
WOODEN-BUCK	BOOTH-6	
2X4-BOARD	BOOTH-6	
AIRHOSE	P-CLEANING	FRAG
PAINTCOVER	P-CLEANING	
WINGNUTS	P-CLEANING	FRAG
PAINT-POT	P-CLEANING	
COVER	P-CLEANING	
PAINTCAN	P-CLEANING	FRAG
PAINTCAN-1	P-CLEANING	
PAINTCAN-2	P-CLEANING	
SCREENTANK	P-CLEANING	
THINNERTANK	P-MIXING	
MIXCAN	P-MIXING	
SPRAY-TIP	P-MIXING	
THINNERPAIL	P-MIXING	
SPRAYGUN	P-MIXING	FRAG
SCREW	P-MIXING	FRAG
FILTER-CAP	P-MIXING	
FILTER	P-MIXING	
INNER-FILTER	P-MIXING	
SYPHON-TUBE	P-MIXING	
S-HOLDER	P-MIXING	
RAG-1	P-MIXING	FRAG
DOLLY	P-MIXING	
FILL-TUBE	P-MIXING	
AIRMIXER	P-MIXING	
COVERALLS	LOCKERS	
4'X8'-PANEL	TABLE	
PARTS-BOX	TABLE	
PARTS	PAINT-AREA	
OPERATORS:		
OP	PAINT-AREA	25,6 B

From	To	Steps
PAINT-OFFICE	PAINT-STORAGE	103
PAINT-OFFICE	TOOL-ROOM	233
PAINT-OFFICE	THINNER-STORAGE	123
PAINT-OFFICE	POWER	149
PAINT-OFFICE	BOOTH-1	147
PAINT-OFFICE	BOOTH-3	165
PAINT-OFFICE	BOOTH-5	167
PAINT-OFFICE	BOOTH-2	127
PAINT-OFFICE	BOOTH-4	153
PAINT-OFFICE	BOOTH-6	163
PAINT-OFFICE	P-CLEANING	135
PAINT-OFFICE	P-MIXING	153
PAINT-OFFICE	LOCKERS	169
PAINT-OFFICE	FLAM-LIQUID	170
PAINT-OFFICE	TABLE	169
PAINT-OFFICE	PAINT-AREA	153
PAINT-OFFICE	P-DOOR	120
PAINT-STORAGE	TOOL-ROOM	203
PAINT-STORAGE	THINNER-STORAGE	53
PAINT-STORAGE	POWER	63
PAINT-STORAGE	BOOTH-1	61
PAINT-STORAGE	BOOTH-3	63
PAINT-STORAGE	BOOTH-5	75
PAINT-STORAGE	BOOTH-2	43
PAINT-STORAGE	BOOTH-4	59
PAINT-STORAGE	BOOTH-6	73
PAINT-STORAGE	P-CLEANING	49
PAINT-STORAGE	P-MIXING	55
PAINT-STORAGE	LOCKERS	77
PAINT-STORAGE	FLAM-LIQUID	75
PAINT-STORAGE	TABLE	76
PAINT-STORAGE	PAINT-AREA	61
PAINT-STORAGE	P-DOOR	36
TOOL-ROOM	THINNER-STORAGE	217
TOOL-ROOM	POWER	233
TOOL-ROOM	BOOTH-1	231
TOOL-ROOM	BOOTH-3	237
TOOL-ROOM	BOOTH-5	255
TOOL-ROOM	BOOTH-2	219
TOOL-ROOM	BOOTH-4	231
TOOL-ROOM	BOOTH-6	240
TOOL-ROOM	P-CLEANING	225

TOOL-ROOM	P-MIXING	233
TOOL-ROOM	LOCKERS	263
TOOL-ROOM	FLAM-LIQUID	261
TOOL-ROOM	TABLE	262
TOOL-ROOM	PAINT-AREA	233
TOOL-ROOM	P-DOOR	236
THINNER-STORAGE	POWER	38
THINNER-STORAGE	BOOTH-1	38
THINNER-STORAGE	BOOTH-3	43
THINNER-STORAGE	BOOTH-5	55
THINNER-STORAGE	BOOTH-2	26
THINNER-STORAGE	BOOTH-4	40
THINNER-STORAGE	BOOTH-6	47
THINNER-STORAGE	P-CLEANING	33
THINNER-STORAGE	P-MIXING	39
THINNER-STORAGE	LOCKERS	58
THINNER-STORAGE	FLAM-LIQUID	56
THINNER-STORAGE	TABLE	57
THINNER-STORAGE	PAINT-AREA	36
THINNER-STORAGE	P-DOOR	28
POWER	BOOTH-1	14
POWER	BOOTH-3	29
POWER	BOOTH-5	39
POWER	BOOTH-2	27
POWER	BOOTH-4	33
POWER	BOOTH-6	43
POWER	P-CLEANING	30
POWER	P-MIXING	21
POWER	LOCKERS	44
POWER	FLAM-LIQUID	47
POWER	TABLE	46
POWER	PAINT-AREA	28
POWER	P-DOOR	15
BOOTH-1	BOOTH-3	18
BOOTH-1	BOOTH-5	28
BOOTH-1	BOOTH-2	23
BOOTH-1	BOOTH-4	29
BOOTH-1	BOOTH-6	33
BOOTH-1	P-CLEANING	25
BOOTH-1	P-MIXING	14
BOOTH-1	LOCKERS	35
BOOTH-1	FLAM-LIQUID	41
BOOTH-1	TABLE	39
BOOTH-1	PAINT-AREA	21
BOOTH-1	P-DOOR	17
BOOTH-3	BOOTH-5	18
BOOTH-3	BOOTH-2	29

BOOTH-3	BOOTH-4	23
BOOTH-3	BOOTH-6	26
BOOTH-3	P-CLEANING	26
BOOTH-3	P-MIXING	11
BOOTH-3	LOCKERS	21
BOOTH-3	FLAM-LIQUID	29
BOOTH-3	TABLE	26
BOOTH-3	PAINT-AREA	15
BOOTH-3	P-DOOR	29
BOOTH-5	BOOTH-2	33
BOOTH-5	BOOTH-4	26
BOOTH-5	BOOTH-6	23
BOOTH-5	P-CLEANING	30
BOOTH-5	P-MIXING	20
BOOTH-5	LOCKERS	16
BOOTH-5	FLAM-LIQUID	22
BOOTH-5	TABLE	19
BOOTH-5	PAINT-AREA	17
BOOTH-5	P-DOOR	37
BOOTH-2	BOOTH-4	18
BOOTH-2	BOOTH-6	26
BOOTH-2	P-CLEANING	13
BOOTH-2	P-MIXING	24
BOOTH-2	LOCKERS	34
BOOTH-2	FLAM-LIQUID	32
BOOTH-2	TABLE	33
BOOTH-2	PAINT-AREA	21
BOOTH-2	P-DOOR	17
BOOTH-4	BOOTH-6	13
BOOTH-4	P-CLEANING	11
BOOTH-4	P-MIXING	23
BOOTH-4	LOCKERS	22
BOOTH-4	FLAM-LIQUID	20
BOOTH-4	TABLE	21
BOOTH-4	PAINT-AREA	17
BOOTH-4	P-DOOR	20
BOOTH-6	P-CLEANING	21
BOOTH-6	P-MIXING	29
BOOTH-6	LOCKERS	15
BOOTH-6	FLAM-LIQUID	9
BOOTH-6	TABLE	11
BOOTH-6	PAINT-AREA	18
BOOTH-6	P-DOOR	36
P-CLEANING	P-MIXING	24
P-CLEANING	LOCKERS	29
P-CLEANING	FLAM-LIQUID	26
P-CLEANING	TABLE	27

P-CLEANING	PAINT-AREA	18
P-CLEANING	P-DOOR	23
P-MIXING	LOCKERS	2[illegible]
P-MIXING	FLAM-LIQUID	32
P-MIXING	TABLE	29
P-MIXING	PAINT-AREA	18
P-MIXING	P-DOOR	23
LOCKERS	FLAM-LIQUID	14
LOCKERS	TABLE	9
LOCKERS	PAINT-AREA	19
LOCKERS	P-DOOR	43
FLAM-LIQUID	TABLE	9
FLAM-LIQUID	PAINT-AREA	20
FLAM-LIQUID	P-DOOR	46
TABLE	PAINT-AREA	19
TABLE	P-DOOR	45
PAINT-AREA	P-DOOR	27

4.2 DEPARTMENT OR COST CENTER LAYOUTS

4.3 MATERIAL FLOW

SECTION 5
PROCESS DATA

5.1 DERIVATION OF PROCESS TIMES

5.2 TECHNICAL PROCESSES

5.3 TOOL LIFE

686. TAPE (MAKE READY) SECTION FOR PAINTING WITH MASKING TAPE AT PAINTING AREA
PER 1 OPG: 1 27-APR-83
MASK AREA NOT TO BE PAINTED. MULTIPLY BY THE NO OF EDGES,BULKHEAD LINES,STIFFENER LINES,STIFFENERS,ETC.
* AVERAGE 4' LENGTH OF TAPE APPLIED
OP BEGINS AT PAINT-AREA

1 MOVE TAPE FROM TABLE TO OP
2 GET+MANIPULATE TAPE FROM OP TO OP
3 POSITION TAPE FROM OP TO SECTION
4 TURN WALK 3 STEPS TAPE AT SECTION AND ALIGN F 3
5 PRESS WALK 3 STEPS TAPE AT SECTION F 3
6 MANIPULATE TAPE AT SECTION

689. (SET-UP) WORK TABLE IN PAINT AREA AT PAINT SHOP
PER 1 OPG: 1 18-APR-83
SETUP TABLE FOR SMALL PARTS
OP BEGINS AT PAINT-AREA

1 MOVE WOODEN-BUCK FROM BOOTH-6 TO PAINT-AREA F 3
2 PLACE 2X4-BOARD FROM BOOTH-6 TO PAINT-AREA F 3
3 PLACE 4'X8'-PANEL FROM TABLE TO PAINT-AREA F 2

691. (MAKE READY) OPERATOR ON GLOVE AT PAINT-AREA
PER 1 OPG: 1 13-APR-83
GLOVES ARE WORN ONLY DURING PAINTING AND CLEANUP OF PAINTING EQUIPMENT
OP BEGINS AT PAINT-AREA

1 WALK TO P-CLEANING
2 REMOVE GLOVE FROM P-CLEANING TO OP F 2
3 MANIPULATE GLOVE AT OP F 2

692. (SET-UP) OPERATOR FOR PAINTING AT PAINT-AREA
PER 1 OFG: 1 03-MAR-83
AD SUB-OF 343 FROM ELECTRIC SHOP
OP BEGINS AT P-CLEANING

1 POSITION MASK FROM TABLE TO OP
2 OPERATE MASK AT OP F 2

742. (MAKE READY) PUT COVERALLS ON OPERATOR AT LOCKER-AREA
PER 1 OFG: 1 11-AUG-83
GET READY FOR BLASTING
OP BEGINS AT BLASTING

1 OPEN LOCKER AT LOCKER-AREA
2 GET+PLACE WITH BEND COVERALLS FROM LOCKER TO OP
3 HOLD+MANIPULATE COVERALLS AT OP (PUT ON LEGS) F 2
4 PULL COVERALLS AT OP AND ADJUST
5 HOLD+HANDLE COVERALLS AT OP AND ADJUST (PUT ON ARMS) F 2
6 GET+PULL ZIPPER AT OP

745. (MAKE READY) PLACE EAR PLUGS IN EAR AT LOCKER
PER 1 OFG: 1 11-AUG-83
OP BEGINS AT LOCKER-AREA

1 PLACE EARPLUGS TO OP
2 OPEN BOX AT LOCKER
3 GET+MANIPULATE EARPLUGS AT OP F 2
4 HOLD+POSITION EARPLUGS FROM OP TO OP F 2

761. (MAKE READY) PLACE LINER ON HEAD AT LOCKER
PER 1 OFG: 1 11-AUG-83
OP BEGINS AT LOCKER-AREA

1 GET+POSITION LINER TO OP
2 HOLD+MANIPULATE LINER AT OP AND ADJUST FF 4 (4 5 6)
3 PULL STRAP AT OP AND ADJUST

710. SETUP (ATTACHMENT) SPRAYGUN FOR PAINTING AT PAINT AREA
PER 1 OPG: 1 06-JUN-83
SETUP AIR SPRAYGUN FOR PAINTING WITH CUP
OP BEGINS AT PAINT-AREA
* 1 MAN OPERATION

1 GET+MANIPULATE AIRHOSE AT P-CLEANING PF 12 (4)
2 GET+MOVE SPRAYGUN FROM LOCKERS TO P-CLEANING
3 GET+SLIDE AIRHOSE AT P-CLEANING (HOOKUP AIR)
4 MOVE SPRAYGUN AIRHOSE FROM P-CLEANING TO PAINT-AREA

711. SETUP PAINT POT FOR PAINTING AT PAINT AREA
PER 1 OPG: 1 03-JUN-83
SETUP PAINTING POT FOR AIR SPRAYING
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

1 POSITION CRESENTWRENCH TO PAINT-POT
2 HOLD+LOOSEN 4 WINGNUTS AT P-CLEANING 4 ARM-STROKES USING CRESENTWRENCH AND ASIDE
3 LOOSEN 4 WINGNUTS AT P-CLEANING 8 WRIST-TURN USING HAND
4 GET+MANIPULATE SCREEN AT P-CLEANING
5 HOLD+PLACE SCREEN TO PAINT-POT
6 GET+HANDLE PAINTCAN AT PAINT-POT PT 60 S
7 HOLD+PLACE PAINTCAN TO P-CLEANING
8 PLACE SCREEN TO SCREENTANK
9 OPEN+SHUT COVER AT PAINT-POT
10 FASTEN 4 WINGNUTS AT P-CLEANING 8 WRIST-TURNS USING HAND
11 FASTEN 4 WINGNUTS AT P-CLEANING 6 ARM-STROKES USING CRESENTWRENCH AND ASIDE
12 POSITION AIRHOSE FROM BOOTH-6 TO P-CLEANING (ATTACH AIRHOSE)

713. (TRANSPORT) PAINT ON DOLLY TO PAINT AREA
PER 1 OPG: 1 03-JUN-83
PAINT STORED OUTSIDE
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

1 GET+MOVE DOLLY THROUGH DOOR TO PAINT-STORAGE THROUGH DOOR
2 WAIT 2 M (LOOK FOR PAINT)
3 GET+POSITION PAINTCAN FROM PAINT-STORAGE TO DOLLY
4 GET+MOVE DOLLY PAINTCAN FROM PAINT-STORAGE THROUGH DOOR TO P-MIXING THROUGH DOOR

714. MIX (MAKE READY) EPOXY PAINT IN PAIL AT PAINT MIXING
PER 1 OPG: 1 03-JUN-83
MIX TWO PART PAINT
OP BEGINS AT P-MIXING
* 1 MAN OPERATION

1 LOOSEN PAINTCOVER 8 WRIST-STROKES USING SCREWDRIVER AND ASIDE
2 PLACE AIRMIXER WALK 5 STEPS TO THINNERTANK F 3
3 HOLD+OPERATE AIRMIXER AT THINNERTANK PT 5 S F 3
4 HOLD+OPERATE AIRMIXER AT OP PT 5 S F 3
5 HOLD+MOVE AIRMIXER TO P-MIXING (PUT IN PAINT) F 3
6 HOLD+OPERATE AIRMIXER AT P-MIXING PT 20 S (MIX PAINT) F 3
7 HOLD+PLACE AIRMIXER TO THINNERTANK F 3
8 HOLD+OPERATE AIRMIXER AT THINNERTANK PT 5 S F 3
9 HOLD+PLACE AIRMIXER TO P-MIXING F 3
10 GRIP PAINTCAN AT P-MIXING USING PLIERS AND HOLD
11 MOVE PAINTCAN-1 TO P-MIXING SIMO
12 HOLD+REMOVE PAINTCAN-1 TO OP
13 HOLD+MANEUVER PANITCAN-1 AT MIXCAN AND ASIDE PT 10 S
14 MOVE PAINTCAN-2 TO P-MIXING SIMO
15 GET+MANEUVER PAINTCAN-2 AT MIXCAN AND ASIDE PT 10 S
16 GET+POSITION PAINTCAN-1 TO PAINTCAN-2
17 GET+POSITION PAINTCOVER TO PAINTCAN-2

715. MIX (MAKE READY) PAINT IN MIX-CAN AND STRAIN INTO PAINTGUN AT PAINT AREA
PER 1 OFG: 1 03-JUN-83
MIXING PAINT FOR AIR SPRAYGUN WITH CUP
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

1 LOOSEN PAINTCOVER 8 WRIST-STROKES USING SCREWDRIVER AND ASIDE
2 OPERATE STRICK AT PAINTCAN-1 AND ASIDE STICK PT 60 S
3 GRIP PAINTCAN-1 USING PLIERS AND HOLD
4 HOLD+REMOVE PAINTCAN-1 TO OP
5 HOLD+MANEUVER P"RAINTCAN-1 AT MIXCAN AND ASIDE PT 10 S
6 OPERATE STICK AT PAINTCAN-2 AND ASIDE STICK PT 60 S
7 GET+MANEUVER PAINTCAN-2 AT MIXCAN AND ASIDE PT 10 S
8 GET+POSITION PAINTCAN-1 TO PAINTCAN-2
9 GET+POSITION PAINTCOVER TO PAINTCAN-2
10 OPERATE STICK AT MIXCAN PT 60 S
11 HOLD+TOSS STICK

716. CLEAN PAINTGUN IN PAINT AREA WITH THINNER AT PAINT MIXING
PER 1 OFG: 1 03-JUN-83
CLEAN AIRLESS SPRAYER
OP BEGINS AT P-MIXING
* 1 MAN OPERAATION

1 TURN WALK 3 STEPS WITH BEND LEVER AT P-MIXING (AIR OFF) F 3
2 LOOSEN SPRAY-TIP 8 WRIST-TURNS USING CRESENTWRENCH AND ASIDE
3 WALK 3 STEPS WITH BEND RAG TO THINNERPAIL
4 WIPE FILL-TUBE 5 SQ.FT. USING RAG AND ASIDE
5 PLACE WITH BEND FILL-TUBE TO THINNERPAIL
6 TURN WALK 3 STEPS WITH BEND LEVER AT P-MIXING (AIR ON) F 2
7 OPERATE WALK 5 STEPS WITH BEND SPRAYGUN AT P-MIXING
8 GET+GRIP SPRAY-TIP USING PLIERS AND ASIDE
9 LOOSEN SPRAY-TIP 10 WRIST-TURNS USING FINGERS AND HOLD
10 LOOSEN SCREW AT SPRAY-TIP 10 WRIST-TURNS USING SCREWDRIVER AND ASIDE
11 MANIPULATE WALK 3 STEPS WITH BEND SPRAY-TIP AT THINNERPAIL PT 120 S
12 FASTEN SCREW AT SPRAY-TIP 12 WRIST-TURNS USING SCREWDRIVER AND ASIDE
13 PLACE SPRAY-TIP TO OP AND HOLD
14 OPERATE SPRAYGUN AT P-MIXING (RELEASE PRESURE) PT 10 S
15 LOOSEN WALK 5 STEPS WITH BEND FILTER-CAP 20 WRIST-TURNS USING FINGERS PF 2 (6 7 8) F 2
16 REMOVE FILTER FROM FILTER-CAP TO OP
17 FASTEN WITH BEND FILTER-CAP 20 WRIST-TURNS USING FINGERS PF 2 (6 7

8) F 2
18 MANIPULATE WALK 3 STEPS AIRHOSE AT P-MIXING
19 OPERATE WITH BEND SPRAYGUN AT P-MIXING (CLEAN FILTER) PT 90 S
20 REMOVE INNER-FILTER TO OP
21 OPERATE WITH BEND SPRAYGUN AT P-MIXING (CLEAN INNER FILTER) PT 90 S
22 PLACE INNER-FILTER TO FILTER
23 PLACE FILTER FROM OP TO FILTER-CAP
24 POSITION WALK 3 STEPS AIRHOSE FROM P-MIXING TO OP F 16
25 HOLD+PLACE AIRHOSE FROM OP TO SPRAYGUN AT P-MIXING
26 PLACE WITH BEND SYPHON-TUBE TO S-HOLDER

717. REMOVE SPRAYGUN FOR CLEANING AT PAINT CLEANING
PER 1 OFG: 1 03-JUN-83
CHANGE SPRAYGUN TYPE FOR HARD TO REACH AREAS
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

1 LOOSEN NUT 2 WRIST-STROKES USING CRESENTWRENCH AND ASIDE F 2
2 LOOSEN NUT 10 WRIST-TURNS USING FINGERS F 2
3 FASTEN NUT 10 WRIST-TURNS USING FINGERS F 2
4 FASTEN NUT 2 WRIST-STROKES USING CRESENTWRENCH AND ASIDE F 2

721. REMOVE TAPE ON SECTION AT PAINT AREA
PER 1 OFG: 1 03-JUN-83
MULTIPLY BY NO. OF TAPED AREAS
OP BEGINS AT PAINT-AREA
* 1 MAN OPERATION

1 GET+REMOVE TAPE FROM SECTION TO OP
2 HOLD+MANIPULATE TAPE FROM OP TO OP
3 HOLD+TOSS TAPE FROM OP TO PAINT-AREA

733. (PAINT) (OBJECT) IN PAINT BOOTH AT PAINTING AREA
PER 1 OFG: 1 22-JUN-83
* MULTIPLY BY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OP BEGINS AT PAINT-AREA

1 GET+MOVE WITH KNEEL SPRAYGUN FROM PAINT-AREA TO PAINT-AREA
2 HOLD+OPERATE SPRAYGUN AT PAINT-AREA

734. (PAINT) (OBJECT) IN PAINT BOOTH AT PAINTING AREA
PER 1 OFG: 1 22-JUN-83
* MULTIPLY BY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OP BEGINS AT PAINT-AREA

1 GET+MOVE WITH BEND SPRAYGUN FROM PAINT-AREA TO PAINT-AREA
2 HOLD+OPERATE SPRAYGUN AT PAINT-AREA

739. (CLEAN) OBJECT IN PAINT OR BLAST BOOTH AT PAINT & BLAST BUILDING
PER 1 OFG: 1 06-JUL-83
BLOW OFF GRIT & DIRT WITH AIRHOSE
OP BEGINS AT PAINT-AREA

1 GET+MOVE AIRHOSE FROM P-CLEANING TO PAINT-AREA
2 TURN LEVER AT PAINT-AREA (ON)
3 TURN LEVER AT PAINT-AREA (OFF)
4 GET+MOVE AIRHOSE FROM PAINT-AREA TO P-CLEANING

736. (REMOVE) COVERALLS ON OPERATOR AND PLACE AT LOCKER
PER 1 OPS: 1 23-JUN-83
* REMOVE COVERALLS AT END OF BLASTING
OP BEGINS AT LOCKER-AREA

1 PULL ZIPPER AT OP
2 GET+MANIPULATE TAPE AT OP (TAKE OFF TAPE) F 2
3 GET+MANEUVER COVERALLS AT OP (TAKE ARMS OUT) F 2
4 GET+PUSH WITH BEND COVERALLS AT OP
5 GET+MANIPULATE COVERALLS AT OP AND ADJUST (TAKE LEGS OUT) F 2
6 PICKUP COVERALLS TO OP
7 HOLD+MANIPULATE COVERALLS AT OP (SHAKE OUT COVERALLS)
8 OPEN+SHUT LOCKER AT LOCKER-AREA
9 HOLD+PLACE COVERALLS FROM OP TO LOCKER

686. TAPE (MAKE READY) SECTION FOR PAINTING WITH MASKING TAPE AT PAINTING AREA
PER 1 OPS: 1 27-APR-83
MASK AREA NOT TO BE PAINTED. MULTIPLY BY THE NO OF EDGES,BULKHEAD LINES,STIFFENER LINES,STIFFENERS,ETC.
* AVERAGE 4' LENGTH OF TAPE APPLIED
OP BEGINS AT PAINT-AREA

1 MOVE TAPE FROM TABLE TO OP
2 GET+MANIPULATE TAPE FROM OP TO OP
3 POSITION TAPE FROM OP TO SECTION
4 TURN WALK 3 STEPS TAPE AT SECTION AND ALIGN F 3
5 PRESS WALK 3 STEPS TAPE AT SECTION F 3
6 MANIPULATE TAPE AT SECTION

770. COMBINED SUB-OP

(MAKE READY) OPERATOR FOR PAINTING AT PAINTING AREA
CHECK FILTERS IN MASK AND REPLACE IF NECESSARY
PER 1 OPG: 1 12-AUG-83
* USED ONLY FOR PAINTING IN PAINTING BOOTH
* MULTIPLY BY NO. OF OPERATORS

Combined sub-operation elements

742. (MAKE READY) PUT COVERALLS ON OPERATOR AT LOCKER-AREA

691. (MAKE READY) OPERATOR ON GLOVE AT PAINT-AREA

692. (SET-UP) OPERATOR FOR PAINTING AT PAINT-AREA

726. COMBINED SUB-OP

(SET-UP) SPRAYGUN WITH CUP FOR PAINTING AT PAINT AREA
THIS IS FOR PAINTING OF SMALL PARTS AND TOUCH UP ONLY
PER 1 OPG: 1 08-JUN-83
* 1 MAN OPERATION
* AD LOC.NO. 713 PRO RATED PER PART
* AD LOC.NO. 714 PRO RATED PER PART

Combined sub-operation elements

710. SETUP (ATTACHMENT) SPRAYGUN FOR PAINTING AT PAINT AREA

712. FILL (PAINT) GUN WITH PAINT FOR PAINTING AT PAINT SHOP

720. (CLEAN) SPRAYGUN FOR PAINTING AT PAINT AREA

727. COMBINED SUB-OP

(SET-UP) PAINT POT FOR PAINTING AT PAINT AREA
THIS INCLUDES CLEANING AND FILLING WITH PAINT
PER 1 OPG: 1 08-JUN-83
* 1 MAN OPERATION

Combined sub-operation elements

711. SETUP PAINT POT FOR PAINTING AT PAINT AREA

718. (CLEAN) PAINT POT FOR PAINTING AT PAINT AREA
PER 1 OPG: 1 03-JUN-83
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

1 TURN LEVER AT PAINT-POT (AIR OFF) F 2
2 TURN LEVER AT PAINT-POT (PAINT OFF) F 2
3 PLACE PAINT-COVER FROM P-CLEANING TO THINNER
4 PLACE RAG TO THINNER
5 WIPE PAINT-POT 3 SQ.FT. USING RAG AND ASIDE
6 OPERATE THINNER AT PAINT-POT (POUR THINNER)
7 PLACE.PAINTCOVER TO PAINT-POT
8 TURN LEVER AT PAINT-POT (AIR ON)
9 OPERATE SPRAYGUN AT PAINT-POT PT 120 S

732. (PAINT) (OBJECT) IN PAINT BOOTH AT PAINTING AREA
PER 1 OPG: 1 22-JUN-83
* MULTIPLY BY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OP BEGINS AT PAINT-AREA

1 GET+MOVE WITH 10 STEPS SPRAYGUN FROM PAINT-AREA TO PAINT-AREA
2 HOLD+OPERATE SPRAYGUN AT PAINT-AREA

720. (CLEAN) SPRAYGUN FOR PAINTING AT PAINT AREA
PER 1 OPG: 1 03-JUN-83
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

1 LOOSEN SPRAY-TIP 20 WRIST-TURNS USING FINGERS
2 REMOVE SPRAY-TIP TO OP
3 PLACE SPRAY-TIP SPRAYGUN TO THINNER -
4 WIPE SPRAYGUN AT P-CLEANING 1 SQ.FT. USING RAG AND ASIDE
5 WIPE SPRAY-TIP 1 SQ.FT. USING RAG AND ASIDE
6 WIPE AIRHOSE AT P-CLEANING WALK 3 STEPS 1 SQ.FT. USING RAG AND ASIDE
F 15

687. (MOVE) PARTS-BOX FOR PAINTING TO PAINT-AREA
PER 1 OPG: 1 18-APR-83
MULTIPLY BY NO OF BOXES,CONTAINERS, OR SEPERATE PIECES
OP BEGINS AT PAINT-AREA

1 GET+MOVE PARTS-BOX FROM TABLE TO PAINT-AREA

712. FILL (PAINT) GUN WITH PAINT FOR PAINTING AT PAINT SHOP
PER 1 OPG: 1 03-JUN-83
FOR FILLING PAINT CUP AND ATTACH TO SPRAY GUN
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

1 OPEN PAINTGUC AT P-CLEANING
2 GET+MANIPULATE SCREEN AT SCREENTANK (CLEAN SCREEN)
3 MOVE SPRAYGUN TO P-CLEANING SIMO
4 HOLD+POSITION SCREEN TO SPRAYGUN
5 GET+HANDLE MIXCAN AT SPRAYGUN PT 30 S
6 HOLD+PLACE MIXCAN TO P-CLEANING
7 PLACE SCREEN TO SCREENTANK AND ASIDE
8 PLACE SPRAYGUN TO SPRAYGUN AND ASIDE
9 GET+WIPE SPRAYGUN 2 SQ.FT. USING RAG AND ASIDE

719. (OPEN+CLOSE) PAINT POT FOR FILLING AND CLEANING AT PAINT AREA
PER 1 OPS: 1 03-JUN-83
AD TO CLEAN OR FILLING PAINT POT SUB-OP
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

1 POSITION CRESENTWRENCH TO PAINT-POT F 2
2 HOLD+LOOSEN 4 WINGNUTS AT P-CLEANING 4 ARM-STROKES USING CRESENTWRENCH AND ASIDE
3 LOOSEN 4 WINGNUTS AT P-CLEANING 8 WRIST-TURNS USING FINGERS
4 FASTEN 4 WINGNUTS AT P-CLEANING 8 WRIST-TURNS USING FINGERS
5 HOLD+FASTEN 4 WINGNUTS AT P-CLEANING 6 ARM-STROKES USING CRESENTWRENCH AND ASIDE

STANDARD TIME CALCULATION

7.1 WORK SHEETS, TITLE SHEETS, TABLES, CHARTS

PAINT ASSEMBLIES IN PAINT BOOTH

Titlesheet Organization List

Move

689, (SET-UP) WORK TABLE IN PAINT AREA AT PAINT SHOP PAINT SHOP
SETUP TABLE FOR SHALL PARTS

714. MIX (MAKE READY) EPOXY PAINT IN FAIL AT PAINT MIXING
MIX TWO PART PAINT

686, TAPE (MAKE READY) SECTION FOR PAINTING WITH MASKING TAPE AT PAINTING AREA
MASK AREA NOT TO BE PAINTED. MULTIPLY BY THE NO OF EDGES,BULKHEAD LINES,STIFFENER LINES,STIFFENERS,ETC.

687. (MOVE) PARTS-BOX FOR PAINTING TO PAINT-AREA
MULTIPLY BY NO OF BOXES,CONTAINERS, OR SEPERATE PIECES

Operate

719. (OPEN+CLOSE) PAINT POT FOR FILLING AND CLEANING AT PAINT AREA
AD TO CLEAN OR FILLING FAINT POT SUB-OF

Prepare

691. (MAKE READY) OPERATGR ON GLOVE AT {PAINT-AREA
GLOUES ARE WORN ONLY DURING FAINTING AND CLEANUP OF PAINTING EQIOPMENT

692, (SET-UP) OPERATOR FOR PAINTING AT FAINT-AREA
All SUB-OF 343 FROM ELECTRIC SHOP

742, (MAKE READY) FLIT COVERFALLS ON OPERATGR AT LOCKER-AREA
GET READY FOR BLASTING

745. (MAKE READY) PLACE EAR PLUGS IN EAR AT LOCKER

761. (MAKE READY) PLACE LINER ON HEAD AT LOCKER

710 . SETUP {ATTACHMENT) SPRAYGUN FOR PAINTING AT PAINT AREA

SETUP AIR SPRAYGUN FOR PAINTING WITH CUP

711. SETUP PAINT POT FOR PAINTING AT PAINT AREA
SETUP PAINTING POT FOR AIR SPRAYING

715. MIX (MAKE READY) PAINT IN MIX-CAN AND STRAIN INTO PAINTGUN AT PAINT AREA
MIXING PAINT FOR AIR SPRAYGUN WITH CUP

716. CLEAN PAINTGUN IN PAINT AREA WITH THINNER AT PAINT MIXING
CLEAN AIRLESS SPRAYER

770. COMBINED SUB-OP

(MAKE READY) OPERATOR FOR PAINTING AT PAINTING AREA
CHECK FILTERS IN MASK AND REPLACE IF NECESSARY

726. COMBINED SUB-OP

(SET-UP) SPRAYGUN WITH CUP FOR PAINTING AT PAINT AREA
THIS IS FOR PAINTING OF SMALL PARTS AND TOUCH UP ONLY

727. COMBINED SUB-OP

(SET-UP) PAINT POT FOR PAINTING AT PAINT AREA
THIS INCLUDES CLEANING AND FILLING WITH PAINT

Surface Treat
---

713. (TRANSPORT) PAINT ON DOLLY TO PAINT AREA
PAINT STORED OUTSIDE

717. REMOVE SPRAYGUN FOR CLEANING AT PAINT CLEANING
CHANGE SPRAYGUN TYPE FOR HARD TO REACH AREAS

721, REMOVE TAPE ON SECTION AT PAINT AREA
MULTIPLY BY NO. OF TAPED AREAS

733, (PAINT) (OBJECT) IN PAINT BOOTH AT PAINTING AREA

734. (PAINT) (OBJECT) IN FAINT BOOTH AT FAINTING AREA

739. (CLEAN) OBJECT IN PAINT OR BLAST BOOTH AT PAINT & BLAST BUILDING
BLOW OFF GRIT & DIRT WITH AIRHOSE

718. (CLEAN) PAINT POT FOR PAINTING AT PAINT AREA

732. (PAINT) (OBJECT) IN PAINT BOOTH AT PAINTING AREA

720. (CLEAN) SPRAYGUN FOR PAINTING AT PAINT AREA

712. FILL (PAINT) GUN WITH PAINT FOR PAINTING AT PAINT SHOP
FOR FILLING PAINT CUP AND ATTACH TO SPRAY GUN

7.2 HOW TO CALCULATE TIME STANDARDS

tMOST OPERATION TIME CALUCULATION

DETAIL/UNIT/PART	XXX	REV. LTR/DATE	6/30/83
PROCESS/OPER CODE	xx	STANDARD CODE	XX
PART NAME	SUPPLY DEPT. OFFICE		
SHIP CLASS	NW	HULL	50
COST CLASS/J08 #	xx	TRADE	PAINTERS
GROUP (UNIT/ZONE)	xx	WORK AREA	PAINT BOOTH
SUB-GROUP	xx	WORKi ZONE	PAINT BOOTH
SUB-SUB-GROUP	xx	WORK CENTRE	xx
CREW/MACHINE	xx	ASSET/MACHINE	xx
ITEM	xx	SUB-ITEM	xx
GEN, DRAWING	xx	WORK ORDER	xx
DET, DRAWING	xx	SHEET	xx
WORK PACKAGE	xx	APPLICATOR	DK
OPER. DESCRIPTION	PAINT SUPPLY DEPT, OFFICE		
DATE	12-AUG-83	ISSUE #	1

Step	Method	Instruction		Freq
1	(MAKE READY	OPERATOR FOR PAINTING	(770)	01
		~ USED ONLY FOR PAINTING IN PAINTING BOOTH		
		* MULTIPLY BY NO, OF OPERATORS		
2	(MAKE READY)	0FERAT0R ON GLOVE	(691)	1.2
3	(SET-UP)	OPERATOR FOR PAINTING	(692)	1.2
4	TAPE (MAKE READY)	SECTION FOR PAINTING WITH MAS	(686)	.5
		KING TAPE		

	* AVERAGE 4' LENGTH OF TAPE APPLIED		
5	(CLEAN) OBJECT IN PAINT OR BLAST BOOTH	(739)	.2
6	BLOW OFF DIRT	(MACH)	1
7	(TRANSFORT) PAINT ON DOLLY	(713)	.5
	* 1 MAN OPERATION		
8	MIX (MAKE READY) EPOXY PAINT IN PAIL	(7 1 4)	.5
	* 1 MAN OPERATION		
9	MIX (MAKE READY) PAINT IN MIX-CAN AND STRAIN IN TO PAINTGUN	(715)	1.2
	# 1 MAN OPERATION		
10	(SET-UP) PAINT POT FOR PAINTING	(7 2 7)	2
	* 1 MAN OPERATION		
11	(OPEN+CLOSE) PAINT POT FOR FILLING AND CLEANING	(717)	1.2
	X 1 MAN OPERATION		
12	PAINT	(MACH)	1
13	(PAINT) (OBJECT) IN PAINT BOOTH	(7 3 2)	2.5
	X MULTIPLY BY NO., OF FREQUENCIES		
	.X CAN BE 1 OR 2 MAN OPERATION		
14	(PAINT) (OBJECT) IN PAINT BOOTH	(7 3 3)	2.5
	4 MULTIPLY BY NO. OF FREQUENCIES		
	* CAN BE 1 OR 2 MAN OPERATION		
15	(PAINT) (OBJECT) IN PAINT BOOTH	(734)	1.3
	* MULTIPLY BY NO. OF FREQUENCIES		
	$ CAN BE 1 OR 2 MAN OPERATION		
16	REMOVE SPRAYGUN FOR CLEANING	(717)	.1
	X 1 MAN OPERATION		
17	(CLEAN) SPRAYGUN FOR PAINTING	(72())	.1
	X 1 MAN OPERATION		
18	(CLEAN) PAINT FOT FOR PAINTING	(718)	.1
	X 1 MAN OPERATION		
19	REMOVE TAPE ON SECTION	(721)	.5
	X 1 MAN OPERATION		
20	(REMOVE) COVEALLS ON OPRATOR AND PLACE	(736)	.1
	* REMOVE COVERALLS AT END OF BLASTING		

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP		SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1		0.00	0.10		402.	770
2		0.00	1.20		768.	691
3		0.00	1.20		1572.	692
4		0.00	0.50		960.	686
5		0.00	0.20		230.	739
6	MACHINE OPERATION	0.00	1.00		18000.	
7		0.00	0.50		3257.	713
8		0.00	0.50		3635.	714
9		0.00	1.20		8340.	715
10		0.00	1.20		22584.	727
11		0.00	1.20		5112.	719
12	MACHINE OPERATION	0.00	1.00		46800.	
13		0.00	2.50		675.	732
14		0.00	2.50		700.	733
15		0.00	1.30		234.	734
16		0.00	0.10		166.	717
17		0.00	0.10		403.	720
18		0.00	0.10		427.	716
19		0.00	0.50		90.	721
20		0.00	0.10		135.	736
				---------	---------	
	MANUAL TIME(TMU)			0.	49692.	
	ACTUAL PROCESS TIME(TMU)			0.	64800.	
	FACTORED PROCESS TIME(TMU)			0.		
	TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

M O S T OPERATION TIME CALCULATION

.

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	0.497		0.000	0.497
ASSIGNED INTERNAL	(0 . 0 0 0)		0.000)	0.000
PROCESS TIME	0.543		0.000	0.643
STANDARD(HRS,/CYCLE)	1.145		0,000	1.145
PIECES PER CYCLE	1			
STANDARD HOURS				1.1

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	XX	REV. LTR/DATE	6/30/83
PROCESS/OPER CODE	XX	STANDARD CODE	XX
PART NAME	SUPPLY DEPT. ISSUE ROOM		
SHIP CLASS	ARS	HULL	50
COST CLASS/JOB #	XX	TRADE	PAINTERS
GROUP (UNIT/ZONE)	XX	WORK AREA	PAINT BOOTH
SUB-GROUP	XX	WORK ZONE	PAINT BOOTH
SUB-SUB-GROUP	XX	WORK CENTER	XX
CREW/MACHINE	XX	ASSET/MACHINE	XX
ITEM	XX	SUB-ITEM	XX
GEN. DRAWING	XX	WORK ORDER	XX
DET. DRAWING	XX	SHEET	XX
WORK PACKAGE	XX	APPLICATOR	DK
OPER. DESCRIPTION	PAINT SUPPLY DEPT. ISSUE ROOM IN PAINT BLDG		
DATE	12-AUG-83	ISSUE #	1

Step	Method Instruction		Freq
1	(MAKE READY) OPERATOR FOR PAINTING * USED ONLY FOR PAINTING IN PAINTING BOOTH * MULTIPLY BY NO. OF OPERATORS	(770)	.2
2	(MAKE READY) OPERATOR ON GLOVE	(691)	3
3	(SET-UP) OPERATOR FOR PAINTING	(692)	3
4	TAPE (MAKE READY) SECTION FOR PAINTING WITH MASKING TAPE * AVERAGE 4' LENGTH OF TAPE APPLIED	(686)	1.2

5	(CLEAN) OBJECT IN PAINT OR BLAST BOOTH	(739)	.6
6	BLOW OFF DIRT	(MACH)	1
7	(TRANSPORT) PAINT ON DOLLY	(713)	1.2
	* 1 MAN OPERATION		
8	MIX (MAKE READY) EPOXY PAINT IN PAIL	(714)	1.2
	* 1 MAN OPERATION		
9	MIX (MAKE READY) PAINT IN MIX-CAN AND STRAIN IN TO PAINTGUN	(715)	3
	* 1 MAN OPERATION		
10	(SET-UP) PAINT POT FOR PAINTING	(727)	
	* 1 MAN OPERATION		
	* 719		
11	(OPEN+CLOSE) PAINT POT FOR FILLING AND CLEANING	(719)	3
	* 1 MAN OPERATION		
12	PAINT	(MACH)	1
13	(PAINT) (OBJECT) IN PAINT BOOTH	(732)	6.4
	* MULTIPLY BY NO. OF FREQUENCIES		
	* CAN BE 1 OR 2 MAN OPERATION		
14	(PAINT) (OBJECT) IN PAINT BOOTH	(733)	6.4
	* MULTIPLY BY NO. OF FREQUENCIES		
	* CAN BE 1 OR 2 MAN OPERATION		
15	(PAINT) (OBJECT) IN PAINT BOOTH	(734)	3.2
	* MULTIPLY BY NO. OF FREQUENCIES		
	* CAN BE 1 OR 2 MAN OPERATION		
16	REMOVE SPRAYGUN FOR CLEANING	(717)	.2
	* 1 MAN OPERATION		
17	(CLEAN) PAINT POT FOR PAINTING	(718)	.2
	* 1 MAN OPERATION		
18	(CLEAN) PAINT POT FOR PAINTING	(713)	.2
	* 1 MAN OPERATION		
19	REMOVE TAPE ON SECTION	(721)	1.2
	* 1 MAN OPERATION		
20	(REMOVE) COVERALLS ON OPERATOR AND PLACE	(736)	.2
	* REMOVE COVERALLS AT END OF BLASTING		

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP		SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1		0.00	0.20		804.	770
2		0.00	3.00		1920.	691
3		0.00	3.00		3930.	692
4		0.00	1.20		2304.	686
5		0.00	0.60		690.	739
6	MACHINE OPERATION	0.00	1.00		21000.	
7		0.00	1.20		7817.	713
8		0.00	1.20		8724.	714
9		0.00	3.00		20650.	715
10		0.00	1.00		18620.	727
11		0.00	3.00		12780.	719
12	MACHINE OPERATION	0.00	1.00		66400.	
13		0.00	6.40		1728.	732
14		0.00	6.40		1792.	733
15		0.00	3.20		576.	734
16		0.00	0.20		336.	717
17		0.00	0.20		854.	718
18		0.00	0.20		854.	718
19		0.00	1.20		216.	721
20		0.00	0.20		270.	736
				---	---	
	MANUAL TIME(TMU)			0.	134957.	
	ACTUAL PROCESS TIME(TMU)			0.	174200.	
	FACTORED PROCESS TIME(TMU)			0.		
	TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	0.853		0.000	0.853
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	1.094		0.000	1.094
STANDARD(HRS./CYCLE)	1.947		0.000	1.947
PIECES PER CYCLE	1			
STANDARD HOURS				1.9

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	XXX	REV. LTR/DATE	6/30/83
PROCESS/OPER CODE	XX	STANDARD CODE	XX
PART NAME	ROPE STOWAGE BIN 3'X9'X9K		
SHIP CLASS	ARS	HULL	50
COST CLASS/JOB #	XX	TRADE	PAINTERS
GROUP (UNIT/ZONE)	XX	WORK AREA	PAINT BOOTH
SUB-GROUP	XX	WORK ZONE	PAINT BOOTH
SUB-SUB-GROUP	XX	WORK CENTER	XX
CREW/MACHINE	XX	ASSET/MACHINE	XX
ITEM	XX	SUB-ITEM	XX
GEN. DRAWING	XX	WORK ORDER	XX
DET. DRAWING	XX	SHEET	XX
WORK PACKAGE	XX	APPLICATOR	DK
OPER. DESCRIPTION	PAINT ROPE STOWAGE BIN 3'X9'X9' IN PAINT BLDG		
DATE	12-AUG-83	ISSUE #	1

Step	Method Instruction		Freq
1	(MAKE READY) OPERATOR FOR PAINTING	(770)	.03
	* USED ONLY FOR PAINTING IN PAINTING BOOTH		
	* MULTIPLY BY NO. OF OPERATORS		
2	(MAKE READY) OPERATOR ON GLOVE	(691)	.45
3	(SET-UP) OPERATOR FOR PAINTING	(692)	.45
4	TAPE (MAKE READY) SECTION FOR PAINTING WITH MAS	(686)	.18
	KING TAPE		
	* AVERAGE 4' LENGTH OF TAPE APPLIED		

5	(CLEAN) OBJECT IN PAINT OR BLAST BOOTH	(739)	.09
6	JO'9WBLOW OFF DIRT	(MACH)	1
7	(TRANSPORT) PAINT ON DOLLY	(713)	.18
	* 1 MAN OPERATION		
8	MIX (MAKE READY) EPOXY PAINT IN PAIL	(714)	.18
	* 1 MAN OPERATION		
9	MIX (MAKE READY) PAINT IN MIX-CAN AND STRAIN IN TO PAINTGUN	(715)	.45
	* 1 MAN OPERATION		
10	(SET-UP) PAINT POT FOR PAINTING	(727)	.45
	* 1 MAN OPERATION		
11	(OPEN+CLOSE) PAINT POT FOR FILLING AND CLEANING	(719)	.45
	* 1 MAN OPERATION		
12	PAINT	(MACH)	1
13	(PAINT) (OBJECT) IN PAINT BOOTH	(732)	.96
	* MULTIPLY BY NO. OF FREQUENCIES		
	* CAN BE 1 OR 2 MAN OPERATION		
14	(PAINT) (OBJECT) IN PAINT BOOTH	(732)	.96
	* MULTIPLY BY NO. OF FREQUENCIES		
	* CAN BE 1 OR 2 MAN OPERATION		
15	(PAINT) (OBJECT) IN PAINT BOOTH	(734)	.48
	* MULTIPLY BY NO. OF FREQUENCIES		
	* CAN BE 1 OR 2 MAN OPERATION		
16	REMOVE SPRAYGUN FOR CLEANING	(717)	.03
	* 1 MAN OPERATION		
17	(CLEAN) PAINT POT FOR PAINTING	(718)	.03
	* 1 MAN OPERATION		
18	(CLEAN) SPRAYGUN FOR PAINTING	(720)	.03
	* 1 MAN OPERATION		
19	REMOVE TAPE ON SECTION	(721)	.18
	* 1 MAN OPERATION		
20	(REMOVE) COVEALLS ON OPERATOR AND PLACE	(736)	.03
	* REMOVE COVERALLS AT END OF BLASTING		

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP		SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1		0.00	0.03		121.	770
2		0.00	0.43		288.	691
3		0.00	0.43		590.	692
4		0.00	0.18		346.	686
5		0.00	0.09		104.	739
6	MACHINE OPERATION	0.00	1.00		18000.	
7		0.00	0.18		1173.	713
8		0.00	0.18		1309.	714
9		0.00	0.43		3128.	715
10		0.00	0.43		8469.	727
11		0.00	0.43		1917.	719
12	MACHINE OPERATION	0.00	1.00		15600.	
13		0.00	0.96		259.	732
14		0.00	0.96		259.	732
15		0.00	0.48		86.	734
16		0.00	0.03		50.	717
17		0.00	0.03		128.	718
18		0.00	0.03		121.	720
19		0.00	0.18		32.	721
20		0.00	0.03		41.	736
				---	---	
	MANUAL TIME(TMU)			0.	153376.	
	ACTUAL PROCESS TIME(TMU)			0.	207600.	
	FACTORED PROCESS TIME(TMU)			0.		
	TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	0.184		0.000	0.184
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.336		0.000	0.336
STANDARD(HRS./CYCLE)	0.520		0.000	0.520
PIECES PER CYCLE	1			
STANDARD HOURS				0.5

SECTION 8
DATA SYNTHESIS AND BACK-UP

8.1 SUMMARY

686. TAPE (MAKE READY) SECTION FOR PAINTING WITH MASKING TAPE AT PAINTING AREA
PER 1 OFG: 1 27-APR-83
MASK AREA NOT TO BE PAINTED. MULTIPLY BY THE NO OF EDGES,BULKHEAD LINES,STIFFENER LINES,STIFFENERS,ETC.
* AVERAGE 4' LENGTH OF TAPE APPLIED
OP BEGINS AT PAINT-AREA

TOTAL TMU 1920.

689. (SET-UP) WORK TABLE IN PAINT AREA AT PAINT SHOP
PER 1 OFG: 1 18-APR-83
SETUP TABLE FOR SMALL PARTS
OF BEGiNS AT PAINT-AREA

TOTAL TMU 3360.

691. (MAKE READY) OPERATOR ON GLOVE AT {PAINT-AREA
PER 1 OFG: 1 13-APR-83
GLOVES ARE WORN ONLY DURING PAINTING AND CLEANUP OF PAINTiNG EQUIPMENT
OF BEGINS AT PAINT-AREA

TOTAL TMU .5408

672 . (SET-UP) OPERATOR FOR P'AINTING AT PAINT-AREA
PER 1 OFG: 1 03-MAR-83
AD SUB-OF' 343 FROM ELECTRIC SHOP
OP BEGINS AT F-CLEANING

TOTAL TMU 1310.

742. (MAKE READY) PUT COVERALLS ON OPERATOR AT LOCKER-AREA
PER 1 OFG: 1 11-AUG-83
GET READY FOR BLASTING
OP BEGINS AT BLASTING

TOTAL TMU 2070.

745. (MAKE READY) PLACE EAR PLUGS IN EAR AT LOCKER
PER 1 OFG: 1 11-AUG-83
OP BEGINS AT LOCKER-AREA

TOTAL TMU 530.

761, (MAKE READY) PLACE LINES ON HEAD AT LOCKER
PER (1 OFG: 1 11-AUG-E3
OP BEGINS AT LOCKER-AREA

TOTAL TMU 640.

710. SETUP (ATTACHMENT) SPRAYGUN FOR PAINTING AT PAINT AREA
PER 1 OFG: 1 06-JUN-83
SETUP AIR SPRAYGUN FOR PAINTING WITH CUP
OF BEGINS AT PAINT-AREA
X 1 MAN OPERATION

TOTAL TMU 3090.

711, SETUP PAINT POT FOR PAINTING AT PAINT AREA
PER 1 OFG: 1 03-JUN-83
SETUP PAINTING POT FOR AIR SPRAYING
OF BEGINS AT F-CLEANING
X 1 MAN OPERATION

TOTAL TMU 7290

713. (TRANSPORT) PAINT ON DOLLY TO PAINT AREA
PER 1 OPG: 1 03-JUN-83
PAINT STORED OUTSIDE
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

TOTAL TMU 6514.

714. MIX (MAKE READY) EPOXY PAINT IN PAIL AT PAINT MIXING
PER 1 OPG: 1 03-JUN-83
MIX TWO PART PAINT
OP BEGINS AT P-MIXING
* 1 MAN OPERATION

TOTAL TMU 7270.

715. MIX (MAKE READY) PAINT IN MIX-CAN AND STRAIN INTO PAINTGUN AT PAINT AREA
PER 1 OPG: 1 03-JUN-83
MIXING PAINT FOR AIR SPRAYGUN WITH CUP
OP BEGINS AT P-CLEANING
X 1 MAN OPERATION

TOTAL TMU 6950.

716. CLEAN PAINTGUN IN PAINT AREA WITH THINNER AT PAINT MIXING
PER 1 OPG: 1 03-JUN-83
CLEAN AIRLESS SPRAYER
OP BEGINS AT P-MIXING
* 1 MAN OPERAATION

TOTAL TMU 18730.

717. REMOVE SPRAYGUN FOR CLEANING AT PAINT CLEANING
PER 1 OFG: 1 03-JUN-83
CHANGE SPRAYGUN TYPE FOR HARD TO REACH AREAS
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

TOTAL TMU 1680.

721. REMOVE TAPE ON SECTION AT PAINT AREA
PER 1 OFG: 1 03-JUN-83
MULTIPLY BY NO. OF TAPED AREAS
OP BEGINS AT PAINT-AREA
* 1 MAN OPERATION

TOTAL TMU 180.

733. (PAINT) (OBJECT) IN PAINT BOOTH AT PAINTING AREA
PER 1 OFG: 1 22-JUN-83
* MULTIPLY BY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OP BEGINS AT PAINT-AREA

TOTAL TMU 280.

734. (PAINT) (OBJECT) IN PAINT BOOTH AT PAINTING AREA
PER 1 OFG: 1 22-JUN-83
* MULTIPLY BY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OP BEGINS AT PAINT-AREA

TOTAL TMU 180.

739. (CLEAN) OBJECT IN PAINT OR BLAST BOOTH AT PAINT & BLAST BUILDING
PER 1 OFG: 1 06-JUL-83
BLOW OFF GRIT & DIRT WITH AIRHOSE
OP BEGINS AT PAINT-AREA

TOTAL TMU 1150.

736. (REMOVE) COVEALLS ON OPERATOR AND PLACE AT LOCKER
PER 1 OFG: 1 23-JUN-83
* REMOVE COVERALLS AT END OF BLASTING
OP BEGINS AT LOCKER-AREA

TOTAL TMU 1350.

686. TAPE (MAKE READY) SECTION FOR PAINTING WITH MASKING TAPE AT PAINTING AREA
PER 1 OFG: 1 27-APR-83
MASK AREA NOT TO BE PAINTED. MULTIPLY BY THE NO OF EDGES,BULKHEAD LINES,STIFFENER LINES,STIFFENERS,ETC.
* AVERAGE 4' LENGTH OF TAPE APPLIED
OP BEGINS AT PAINT-AREA

TOTAL TMU 1920.

770. COMBINED SUB-OP

(MAKE READY) OPERATOR FOR PAINTING AT PAINTING AREA
CHECK FILTERS IN MASK AND REPLACE IF NECESSARY .
PER 1 OFG: 1 12-AUG-83
* USED ONLY FOR PAINTING IN PAINTING BOOTH
* MULTIPLY BY NO. OF OPERATORS .

TOTAL TMU 4020.0

726. COMBINED SUB-OP

(SET-UP) SPRAYGUN WITH CUP FOR PAINTING AT PAINT AREA
THIS IS FOR PAINTING OF SMALL PARTS AND TOUCH UP ONLY
PER 1 OPS: 1 08-JUN-83
* 1 MAN OPERATION
* AD LOC.NO. 713 PRO RATED PER PART
* AD LOC.NO. 714 PRO RATED PER PART

TOTAL TMU 8690.0

727. COMBINED SUB-OP

(SET-UP) PAINT POT FOR PAINTING AT PAINT AREA
THIS INCLUDES CLEANING AND FILLING WITH PAINT
PER 1 OPS: 1 08-JUN-83
* 1 MAN OPERATION

TOTAL TMU 18820.0

718. (CLEAN) PAINT POT FOR PAINTING AT PAINT AREA
PER 1 OPS: 1 03-JUN-83
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

TOTAL TMU 4270.

732. (PAINT) (OBJECT) IN PAINT BOOTH AT PAINTING AREA
PER 1 OPS: 1 22-JUN-83
* MULTIPLY BY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OP BEGINS AT PAINT-AREA

TOTAL TMU 270.

720. (CLEAN) SPRAYGUN FOR PAINTING AT PAINT AREA
PER 1 OPS: 1 03-JUN-83
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

TOTAL TMU 4030.

687. (MOVE) PARTS-BOX FOR PAINTING TO PAINT-AREA
PER 1 OPG: 1 18-APR-83
MULTIPLY BY NO OF BOXES,CONTAINERS, OR SEPERATE PIECES
OP BEGINS AT PAINT-AREA

TOTAL TMU 660.

712. FILL (PAINT) GUN WITH PAINT FOR PAINTING AT PAINT SHOP
PER 1 OPG: 1 03-JUN-83
FOR FILLING PAINT CUP AND ATTACH TO SPRAY GUN
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

TOTAL TMU 1570.

719. (OPEN+CLOSE) PAINT POT FOR FILLING AND CLEANING AT PAINT AREA
PER 1 OPG: 1 03-JUN-83
AB TO CLEAN OR FILLING PAINT POT SUB-OP
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

TOTAL TMU 4260.

6.2 SYNTHESIS AND ANALYSIS

686. TAPE (MAKE READY) SECTION FOR PAINTING WITH MASKING TAPE AT PAINTING AREA

PER 1 OFG: 1 27-APR-83

MASK AREA NOT TO BE PAINTED. MULTIPLYBY THE NO OF EDGES,BULKHEAD LINES,STIFFENER LINES,STIFFENERS,ETC.

* AVERAGE 4' LENGTH OF TAPE APPLIED

OP BEGINS AT PAINT-AREA

1 MOVE TAPE FROM TABLE TO OP	A32 B0 G1 A32 B0 P1 A0	1.00	660.
2 GET+MANIPULATE TAPE FROM OP TO OP	A1 B0 G3 M10 X0 I0 A1	1.00	150.
3 POSITION TAPE FROM OP TO SECTION	A1 B0 G1 A1 B0 P6 A0	1.00	90.
4 TURN WALK 3 STEPS TAPE AT SECTION AND ALIGN F 3	A6 B0 G1 M3 X0 I10 A0	3.00	600.
5 PRESS WALK 3 STEPS TAPE AT SECTION F 3	A6 B0 G1 M3 X0 I0 A0	3.00	300.
6 MANIPULATE TAPE AT SECTION	A1 B0 G1 M10 X0 I0 A0	1.00	120.
	TOTAL TMU		1920.

689. (SET-UP) WORK TABLE IN PAINT AREA AT PAINT SHOP

PER 1 OFG: 1 18-APR-83

SETUP TABLE FOR SMALL PARTS

OP BEGINS AT PAINT-AREA

1 MOVE WOODEN-BUCK FROM BOOTH-6 TO PAINT-AREA F 3	A32 B0 G1 A32 B0 P1 A0	3.00	1980.
2 PLACE 2X4-BOARD FROM BOOTH-6 TO PAINT-AREA F 3	A32 B0 G1 A32 B0 P3 A0	3.00	2040.
3 PLACE 4'X8'-PANEL FROM TABLE TO PAINT-AREA F 2	A32 B0 G1 A32 B0 P3 A0	2.00	1360.
	TOTAL TMU		5380.

691. (MAKE READY) OPERATOR ON GLOVE AT <PAINT-AREA
PER 1 OPG: 1 13-APR-83
GLOVES ARE WORN ONLY DURING PAINTING AND CLEANUP OF PAINTING EQUIPMENT
OP BEGINS AT PAINT-AREA

1	WALK TO P-CLEANING	A32	B0	G0	A0	B0	P0	A0	1.00	320.
2	REMOVE GLOVE FROM P-CLEANING TO OP F 2	A1	B0	G1	A1	B0	P1	A0	2.00	80.
3	MANIPULATE GLOVE AT OP F 2	A1	B0	G1	M10	X0	I0	A0	2.00	240.
								TOTAL TMU		640.

692. (SET-UP) OPERATOR FOR PAINTING AT PAINT-AREA
PER 1 OPG: 1 03-MAR-83
AD SUB-OP 343 FROM ELECTRIC SHOP
OP BEGINS AT P-CLEANING

1	POSITION MASK FROM TABLE TO OP	A54	B0	G1	A54	B0	P6	A0	1.00	1130.
2	OPERATE MASK AT OP F 2	A1	B0	G1	M6	X0	I0	A0	2.00	180.
								TOTAL TMU		1310.

741. (MAKE READY) PUT COVERALLS ON OPERATOR AT LOCKER-AREA
PER 1 OPS: 1 11-AUG-83
GET READY FOR BLASTING
OP BEGINS AT BLASTING

1 OPEN LOCKER AT LOCKER-AREA									
	A1	B1	B0	G1	M3	X0	I0	A0	1.00	1330.
2 GET+PLACE WITH BEND COVERALLS FROM LOCKER TO OP									
	A1	B6	G3	A1	B0	P3	A0		1.00	140.
3 HOLD+MANIPULATE COVERALLS AT OP (PUT ON LEGS) F 2									
	A0	B0	G0	M10	X0	I0	A0		2.00	200.
4 PULL COVERALLS AT OP AND ADJUST									
	A1	B0	G1	M1	X0	I6	A0		1.00	90.
5 HOLD+HANDLE COVERALLS AT OP AND ADJUST (PUT ON ARMS) F 2									
	A0	B0	G0	M6	X0	I6	A0		2.00	240.
6 GET+PULL ZIPPER AT OP									
	A1	B0	G3	M1	X0	I0	A0		1.00	30.

TOTAL TMU 2070.

745. (MAKE READY) PLACE EAR PLUGS IN EAR AT LOCKER
PER 1 OPS: 1 11-AUG-83
OP BEGINS AT LOCKER-AREA

1 PLACE EARPLUGS TO OP									
	A1	B0	G1	A1	B0	P3	A0		1.00	60.
2 OPEN BOX AT LOCKER									
	A1	B0	G1	M3	X0	I0	A0		1.00	50.
3 GET+MANIPULATE EARPLUGS AT OP F 2									
	A1	B0	G3	M10	X0	I0	A0		2.00	280.
4 HOLD+POSITION EARPLUGS FROM OP TO OP F 2									
	A0	B0	G0	A1	B0	P6	A0		2.00	140.

TOTAL TMU 530.

761. (MAKE READY) PLACE LINER ON HEAD AT LOCKER
PER 1 OFG: 1 11-AUG-83
OP BEGINS AT LOCKER-AREA

1 GET+POSITION LINER TO OP	A1 B0 G3 A1 B0 P6 A0	1.00	110.
2 HOLD+MANIPULATE LINER AT OP AND ADJUST FF 4 (4 5 6)	A0 B0 G0 (M10 X0 I6)A0 (4)	1.00	640.
3 PULL STRAP AT OP AND ADJUST	A1 B0 G1 M1 X0 I6 A0	1.00	90.
	TOTAL TMU		840.

710. SETUP (ATTACHMENT) SPRAYGUN FOR PAINTING AT PAINT AREA
PER 1 OFG: 1 06-JUN-83
SETUP AIR SPRAYGUN FOR PAINTING WITH CUP
OP BEGINS AT PAINT-AREA
* 1 MAN OPERATION

1 GET+MANIPULATE AIRHOSE AT P-CLEANING FF 12 (4)	A32 B0 G3 (M10)X0 I0 A0 (12)	1.00	1530.
2 GET+MOVE SPRAYGUN FROM LOCKERS TO P-CLEANING	A54 B0 G3 A54 B0 P1 A0	1.00	1120.
3 GET+SLIDE AIRHOSE AT P-CLEANING (HOOKUP AIR)	A1 B0 G3 M3 X0 I0 A0	1.00	70.
4 MOVE SPRAYGUN AIRHOSE FROM P-CLEANING TO PAINT-AREA	A1 B0 G1 A32 B0 P1 A0	1.00	350.
	TOTAL TMU		3090.

711. SETUP PAINT POT FOR PAINTING AT PAINT AREA
PER 1 OPS: 1 03-JUN-83
SETUP PAINTING POT FOR AIR SPRAYING
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

1 POSITION CRESENTWRENCH TO PAINT-POT
A1 B0 G1 A1 B0 P6 A0 1.00 90.
2 HOLD+LOOSEN 4 WINGNUTS AT P-CLEANING 4 ARM-STROKES USING CRESENTWRENCH AND ASIDE
A0 B0 G0 A0 B0 (P3 A1 L24)A1 B0 P1 A0 (4) 1.00 1140.
3 LOOSEN 4 WINGNUTS AT P-CLEANING 8 WRIST-TURN USING HAND
A1 B0 G1 A0 B0 (F1 A1 L16)A0 B0 P0 A0 (4) 1.00 740.
4 GET+MANIPULATE SCREEN AT P-CLEANING
A1 B0 G3 M10 X0 I0 A0 1.00 140.
5 HOLD+PLACE SCREEN TO PAINT-POT
A0 B0 G0 A1 B0 P3 A0 1.00 40.
6 GET+HANDLE PAINTCAN AT PAINT-POT FT 60 S
A1 B0 G3 M6 X173I0 A0 1.00 1630.
7 HOLD+PLACE PAINTCAN TO P-CLEANING
A0 B0 G0 A1 B0 P3 A0 1.00 40.
8 PLACE SCREEN TO SCREENTANK
A1 B0 G1 A1 B0 P3 A0 1.00 80.
9 OPEN+SHUT COVER AT PAINT-POT
A1 B0 G1 M6 X0 I0 A0 1.00 80.
10 FASTEN 4 WINGNUTS AT P-CLEANING 8 WRIST-TURNS USING HAND
A1 B0 G1 A0 B0 (P1 A1 F16)A0 B0 P0 A0 (4) 1.00 740.
11 FASTEN 4 WINGNUTS AT P-CLEANING 6 ARM-STROKES USING CRESENTWRENCH AND ASIDE
A1 B0 G1 A0 B0 (P3 A1 F32)A1 B0 P1 A0 (4) 1.00 1480.
12 POSITION AIRHOSE FROM BOOTH-6 TO P-CLEANING (ATTACH AIRHOSE)
A42 B0 G1 A42 B0 P6 A0 1.00 910.

TOTAL TMU 7290.

713. (TRANSPORT) PAINT ON DOLLY TO PAINT AREA
PER 1 OPG: 1 03-JUN-83
PAINT STORED OUTSIDE
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

1 GET+MOVE DOLLY THROUGH DOOR TO PAINT-STORAGE THROUGH DOOR			
A42 B16 G3 A96 B16 P1 A0	1.00	1740.
2 WAIT 2 M (LOOK FOR PAINT)			
	1.00	3334.
3 GET+POSITION PAINTCAN FROM PAINT-STORAGE TO DOLLY			
A1 B0 G3 A1 B0 P6 A0	1.00	110.
4 GET+MOVE DOLLY PAINTCAN FROM PAINT-STORAGE THROUGH DOOR TO P-MIXING THROUGH DOOR			
A1 B16 G3 A96 B16 P1 A0	1.00	1330.
	TOTAL TMU	6514.

714. MIX (MAKE READY) EPOXY PAINT IN PAIL AT PAINT MIXING
PER 1 OPG: 1 03-JUN-83
MIX TWO PART PAINT
OP BEGINS AT P-MIXING
* 1 MAN OPERATION

1 LOOSEN PAINTCOVER 8 WRIST-STROKES USING SCREWDRIVER AND ASIDE		
A1 B0 G1 A42 B0 P3 L24 A1 B0 P1 A0	1.00	730.
2 PLACE AIRMIXER WALK 5 STEPS TO THINNERTANK F 3		
A10 B0 G1 A1 B0 P3 A0	3.00	450.
3 HOLD+OPERATE AIRMIXER AT THINNERTANK PT 5 S F 3		
A0 B0 G0 M6 X16 I0 A0	3.00	660.
4 HOLD+OPERATE AIRMIXER AT OP PT 5 S F 3		
A0 B0 G0 M6 X16 I0 A0	3.00	660.
5 HOLD+MOVE AIRMIXER TO P-MIXING (PUT IN PAINT) F 3		
A0 B0 G0 A1 B0 P1 A0	3.00	60.
6 HOLD+OPERATE AIRMIXER AT P-MIXING PT 20 S (MIX PAINT) F 3		
A0 B0 G0 M6 X54 I0 A0	3.00	1800.
7 HOLD+PLACE AIRMIXER TO THINNERTANK F 3		
A0 B0 G0 A1 B0 P3 A0	3.00	120.
8 HOLD+OPERATE AIRMIXER AT THINNERTANK PT 5 S F 3		
A0 B0 G0 M6 X16 I0 A0	3.00	660.
9 HOLD+PLACE AIRMIXER TO P-MIXING F 3		
A0 B0 G0 A1 B0 P3 A0	3.00	120.
10 GRIP PAINTCAN AT P-MIXING USING PLIERS AND HOLD		
A1 B0 G1 A1 B0 P3 C1 A0 B0 P0 A0	1.00	70.
11 MOVE PAINTCAN-1 TO P-MIXING SIMO		
<A42B0 G1 A42 B0 P1 A0 >	1.00	0.

```
12 HOLD+REMOVE PAINTCAN-1 TO OP
                    A0  B0  G0  A1  B0  P1  A0        1.00      20.
13 HOLD+MANEUVER PAINTCAN-1 AT MIXCAN AND ASIDE PT 10 S
                    A0  B0  G0  M10 X32 I0  A0        1.00     420.
14 MOVE PAINTCAN-2 TO P-MIXING SIMO
                    <A42B0  G1  A42 B0  P1  A0 >      1.00       0.
15 GET+MANEUVER PAINTCAN-2 AT MIXCAN AND ASIDE PT 10 S
                    A1  B0. G3  M10 X32 I0  A0        1.00     460.
16 GET+POSITION PAINTCAN-1 TO PAINTCAN-2
                    A1  B0  G3  A1  B0  P6  A0        1.00     110.
17 GET+POSITION PAINTCOVER TO PAINTCAN-2
                    A42 B0  G3  A42 B0  P6  A0        1.00     930.


                                          TOTAL TMU           7270.
```

715. MIX (MAKE READY) PAINT IN MIX-CAN AND STRAIN INTO PAINTGUN AT PAINT AREA

PER 1 OPG: 1 03-JUN-83

MIXING PAINT FOR AIR SPRAYGUN WITH CUP

OP BEGINS AT P-CLEANING

* 1 MAN OPERATION

```
 1 LOOSEN PAINTCOVER 8 WRIST-STROKES USING SCREWDRIVER AND ASIDE
      A1  B0  G1  A1  B0  P3  L24 A1  B0  P1  A0        1.00     320.
 2 OPERATE STRICK AT PAINTCAN-1 AND ASIDE STICK PT 60 S
                    A1  B0  G1  M6  X173I0  A0        1.00    1810.
 3 GRIP PAINTCAN-1 USING PLIERS AND HOLD
      A1  B0  G1  A1  B0  P3  C1  A0  B0  P0  A0        1.00      70.
 4 HOLD+REMOVE PAINTCAN-1 TO OP
                    A0  B0  G0  A1  B0  P1  A0        1.00      20.
 5 HOLD+MANEUVER P~RAINTCAN-1 AT MIXCAN AND ASIDE PT 10 S
                    A0  B0  G0  M10 X32 I0  A0        1.00     420.
 6 OPERATE STICK AT PAINTCAN-2 AND ASIDE STICK PT 60 S
                    A1  B0  G1  M6  X173I0  A0        1.00    1810.
 7 GET+MANEUVER PAINTCAN-2 AT MIXCAN AND ASIDE PT 10 S
                    A1  B0  G3  M10 X32 I0  A0        1.00     460.
 8 GET+POSITION PAINTCAN-1 TO PAINTCAN-2
                    A1  B0  G3  A1  B0  P6  A0        1.00     110.
 9 GET+POSITION PAINTCOVER TO PAINTCAN-2
                    A1  B0  G3  A1  B0  P6  A0        1.00     110.
10 OPERATE STICK AT MIXCAN PT 60 S
                    A1  B0  G1  M6  X173I0  A0        1.00    1810.
11 HOLD+TOSS STICK
                    A0  B0  G0  A1  B0  P0  A0        1.00      10.
```

TOTAL TMU 8750.

716. CLEAN PAINTGUN IN PAINT AREA WITH THINNER AT PAINT MIXING
PER 1 OPS: 1 03-JUN-83
CLEAN AIRLESS SPRAYER
OP BEGINS AT P-MIXING
* 1 MAN OPERATION

1 TURN WALK 3 STEPS WITH BEND LEVER AT P-MIXING (AIR OFF) F 3
A6 B6 G1 M3 X0 I0 A0 3.00 480.
2 LOOSEN SPRAY-TIP 8 WRIST-TURNS USING CRESENTWRENCH AND ASIDE
A1 B0 G1 A1 B0 P3 L16 A1 B0 P1 A0 1.00 240.
3 WALK 3 STEPS WITH BEND RAG TO THINNERPAIL
A1 B0 G0 A0 B0 P0 A0 1.00 10.
4 WIPE FILL-TUBE 5 SQ.FT. USING RAG AND ASIDE
A1 B0 G1 A1 B0 P1 S32 A1 B0 P1 A0 1.00 360.
5 PLACE WITH BEND FILL-TUBE TO THINNERPAIL
A1 B6 G1 A1 B0 P3 A0 1.00 120.
6 TURN WALK 3 STEPS WITH BEND LEVER AT P-MIXING (AIR ON) F 2
A6 B6 G1 M3 X0 I0 A0 2.00 320.
7 OPERATE WALK 3 STEPS WITH BEND SPRAYGUN AT P-MIXING
A10 B6 G1 M6 X0 I0 A0 1.00 230.
8 GET+GRIP SPRAY-TIP USING PLIERS AND ASIDE
A1 B0 G3 A1 B0 P3 C1 A1 B0 P1 A0 1.00 110.
9 LOOSEN SPRAY-TIP 10 WRIST-TURNS USING FINGERS AND HOLD
A1 B0 G1 A1 B0 P1 L24 A0 B0 P0 A0 1.00 280.
10 LOOSEN SCREW AT SPRAY-TIP 10 WRIST-TURNS USING SCREWDRIVER AND ASIDE
A1 B0 G1 A1 B0 P3 L24 A1 B0 P1 A0 1.00 320.
11 MANIPULATE WALK 3 STEPS WITH BEND SPRAY-TIP AT THINNERPAIL PT 120 S
A6 B6 G1 M10 X330I0 A0 1.00 3530.
12 FASTEN SCREW AT SPRAY-TIP 12 WRIST-TURNS USING SCREWDRIVER AND ASIDE
A1 B0 G1 A1 B0 P3 F24 A1 B0 P1 A0 1.00 320.
13 PLACE SPRAY-TIP TO OP AND HOLD
A1 B0 G1 A1 B0 P3 A0 1.00 60.
14 OPERATE SPRAYGUN AT P-MIXING (RELEASE PRESURE) PT 10 S
A1 B0 G1 M6 X32 I0 A0 1.00 400.
15 LOOSEN WALK 5 STEPS WITH BEND FILTER-CAP 20 WRIST-TURNS USING FINGERS PF 2 (6 7 8) F 2
A10 B6 G1 A1 B0 (P1 L42)A0 B0 P0 A0 (2) 2.00 2080.
16 REMOVE FILTER FROM FILTER-CAP TO OP
A1 B0 G1 A1 B0 P1 A0 1.00 40.
17 FASTEN WITH BEND FILTER-CAP 20 WRIST-TURNS USING FINGERS PF 2 (6 7 8) F 2
A1 B6 G1 A1 B0 (P1 F42)A0 B0 P0 A0 (2) 2.00 1900.
18 MANIPULATE WALK 3 STEPS AIRHOSE AT P-MIXING

```
                    A6  B0  G1  M10 X0  I0  A0       1.00     170.
19 OPERATE WITH BEND SPRAYGUN AT P-MIXING ( CLEAN FILTER ) FT 90 S
                    A1  B6  G1  M6  X245I0  A0       1.00    2390.
20 REMOVE INNER-FILTER TO OP
                    A1  B0  G1  A1  B0  P1  A0       1.00      40.
21 OPERATE WITH BEND SPRAYGUN AT P-MIXING ( CLEAN INNER FILTER ) FT 90
   S
                    A1  B6  G1  M6  X245I0  A0       1.00    2590.
22 PLACE INNER-FILTER TO FILTER
                    A1  B0  G1  A1  B0  P3  A0       1.00      60.
23 PLACE FILTER FROM OP TO FILTER-CAP
                    A1  B0  G1  A1  B0  P3  A0       1.00      60.
24 POSITION WALK 3 STEPS AIRHOSE FROM P-MIXING TO OP F 16
                    A6  B0  G1  A1  B0  P6  A0      16.00    2240.
25 HOLD+PLACE AIRHOSE FROM OP TO SPRAYGUN AT P-MIXING
                    A0  B0  G0  A1  B0  P3  A0       1.00      40.
26 PLACE WITH BEND SYPHON-TUBE TO S-HOLDER
                    A1  B6  G1  A1  B0  P3  A0       1.00     120.

                                                TOTAL TMU      18730.
```

717. REMOVE SPRAYGUN FOR CLEANING AT PAINT CLEANING
FER 1 OFG: 1 03-JUN-83
CHANGE SPRAYGUN TYPE FOR HARD TO REACH AREAS
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

```
1 LOOSEN NUT 2 WRIST-STROKES USING CRESENTWRENCH AND ASIDE F 2
     A1  B0  G1  A1  B0  P3  L6  A1  B0  P1  A0       2.00     280.
2 LOOSEN NUT 10 WRIST-TURNS USING FINGERS F 2
     A1  B0  G1  A1  B0  P1  L24 A0  B0  P0  A0       2.00     560.
3 FASTEN NUT 10 WRIST-TURNS USING FINGERS F 2
     A1  B0  G1  A1  B0  P1  F24 A0  B0  P0  A0       2.00     560.
4 FASTEN NUT 2 WRIST-STROKES USING CRESENTWRENCH AND ASIDE F 2
     A1  B0  G1  A1  B0  P3  F6  A1  B0  P1  A0       2.00     280.

                                                TOTAL TMU      1680.
```

721. REMOVE TAPE ON SECTION AT PAINT AREA
PER 1 OFG: 1 03-JUN-83
MULTIPLY BY NO. OF TAPED AREAS
OP BEGINS AT PAINT-AREA
* 1 MAN OPERATION

1	GET+REMOVE TAPE FROM SECTION TO OP	A1	B0	G3	A1	B0	P1	A0	1.00	60.
2	HOLD+MANIPULATE TAPE FROM OP TO OP	A0	B0	G0	M10	X0	I0	A1	1.00	110.
3	HOLD+TOSS TAPE FROM OP TO PAINT-AREA	A0	B0	G0	A1	B0	P0	A0	1.00	10.

TOTAL TMU 180.

733. (PAINT) (OBJECT) IN PAINT BOOTH AT PAINTING AREA
PER 1 OFG: 1 22-JUN-83
* MULTIPLY BY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OP BEGINS AT PAINT-AREA

1	GET+MOVE WITH KNEEL SPRAYGUN FROM PAINT-AREA TO PAINT-AREA	A1	B16	G3	A1	B0	P1	A0	1.00	220.
2	HOLD+OPERATE SPRAYGUN AT PAINT-AREA	A0	B0	G0	M6	X0	I0	A0	1.00	60.

TOTAL TMU 280.

734. (PAINT) (OBJECT) IN PAINT BOOTH AT PAINTING AREA
PER 1 OFG: 1 22-JUN-83
* MULTIPLY BY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OP BEGINS AT PAINT-AREA

1	GET+MOVE WITH BEND SPRAYGUN FROM PAINT-AREA TO PAINT-AREA	A1	B6	G3	A1	B0	P1	A0	1.00	120.
2	HOLD+OPERATE SPRAYGUN AT PAINT-AREA	A0	B0	G0	M6	X0	I0	A0	1.00	60.

TOTAL TMU 180.

739. (CLEAN) OBJECT IN PAINT OR BLAST BOOTH AT PAINT & BLAST BUILDING
PER 1 OPG: 1 06-JUL-83
BLOW OFF GRIT & DIRT WITH AIRHOSE
OP BEGINS AT PAINT-AREA

1 GET+MOVE AIRHOSE FROM P-CLEANING TO PAINT-AREA A32 B0 G3 A32 B0 P1 A0	1.00	680.
2 TURN LEVER AT PAINT-AREA (ON) A1 B0 G1 M3 X0 I0 A0	1.00	50.
3 TURN LEVER AT PAINT-AREA (OFF) A1 B0 G1 M3 X0 I0 A0	1.00	50.
4 GET+MOVE AIRHOSE FROM PAINT-AREA TO P-CLEANING A1 B0 G3 A32 B0 P1 A0	1.00	370.
	TOTAL TMU	1150.

736. (REMOVE) COVEALLS ON OPERATOR AND PLACE AT LOCKER
PER 1 OPG: 1 23-JUN-83
* REMOVE COVERALLS AT END OF BLASTING
OP BEGINS AT LOCKER-AREA

1 PULL ZIPPER AT OP A1 B0 G1 M1 X0 I0 A0	1.00	30.
2 GET+MANIPULATE TAPE AT OP (TAKE OFF TAPE) F 2 A1 B0 G3 M10 X0 I0 A0	2.00	280.
3 GET+MANEUVER COVERALLS AT OP (TAKE ARMS OUT) F 2 A1 B0 G3 M10 X0 I0 A0	2.00	280.
4 GET+PUSH WITH BEND COVERALLS AT OP A1 B6 G3 M1 X0 I0 A0	1.00	110.
5 GET+MANIPULATE COVERALLS AT OP AND ADJUST (TAKE LEGS OUT) F 2 A1 B0 G3 M10 X0 I6 A0	2.00	400.
6 PICKUP COVERALLS TO OP A1 B0 G1 A1 B0 P0 A0	1.00	30.
7 HOLD+MANIPULATE COVERALLS AT OP (SHAKE OUT COVERALLS) A0 B0 G0 M10 X0 I0 A0	1.00	100.
8 OPEN+SHUT LOCKER AT LOCKER-AREA A1 B0 G1 M6 X0 I0 A0	1.00	80.
9 HOLD+PLACE COVERALLS FROM OP TO LOCKER A0 B0 G0 A1 B0 P3 A0	1.00	40.
	TOTAL TMU	1350.

686. TAPE (MAKE READY) SECTION FOR PAINTING WITH MASKING TAPE AT PAINTING AREA

PER 1 OPS: 1 27-APR-83

MASK AREA NOT TO BE PAINTED. MULTIPLY BY THE NO OF EDGES,BULKHEAD LINES,STIFFENER LINES,STIFFENERS,ETC.

* AVERAGE 4' LENGTH OF TAPE APPLIED

OF BEGINS AT PAINT-AREA

1	MOVE TAPE FROM TABLE TO OP	A32	B0	G1	A32	B0	P1	A0	1.00	660.
2	GET+MANIPULATE TAPE FROM OP TO OP	A1	B0	G3	M10	X0	I0	A1	1.00	150.
3	POSITION TAPE FROM OP TO SECTION	A1	B0	G1	A1	B0	P6	A0	1.00	90.
4	TURN WALK 3 STEPS TAPE AT SECTION AND ALIGN F 3	A6	B0	G1	M3	X0	I10	A0	3.00	600.
5	PRESS WALK 3 STEPS TAPE AT SECTION F 3	A6	B0	G1	M3	X0	I0	A0	3.00	300.
6	MANIPULATE TAPE AT SECTION	A1	B0	G1	M10	X0	I0	A0	1.00	120.

TOTAL TMU 1920.

DATA SYNTHESIS AND BACK-UP

770. COMBINED SUB-OP

(MAKE READY) OPERATOR FOR PAINTING AT PAINTING AREA
CHECK FILTERS IN MASK AND REPLACE IF NECESSARY
PER 1 OPS: 1 12-AUG-83
* USED ONLY FOR PAINTING IN PAINTING BOOTH
* MULTIPLY BY NO. OF OPERATORS

TOTAL TMU 4020.0

Combined sub-operation elements	Freq.	TMU
742. (MAKE READY) PUT COVERALLS ON OPERATOR AT LOCKER-AREA	1.00	2070.0
691. (MAKE READY) OPERATOR ON GLOVE AT PAINT-AREA	1.00	640.0
692. (SET-UP) OPERATOR FOR PAINTING AT PAINT-AREA	1.00	1310.0
Total TMU		4020.0

726. COMBINED SUB-OP

(SET-UP) SPRAYGUN WITH CUP FOR PAINTING AT PAINT AREA
THIS IS FOR PAINTING OF SMALL PARTS AND TOUCH UP ONLY
PER 1 OPG: 1 08-JUN-83
* 1 MAN OPERATION
* AD LOC.NO. 713 PRO RATED PER PART
* AD LOC.NO. 714 PRO RATED PER PART

TOTAL TMU 8690.0

Combined sub-operation elements	Freq.	TMU
710. SETUP (ATTACHMENT) SPRAYGUN FOR PAINTING AT PAINT AREA	1.00	3090.0
712. FILL (PAINT) GUN WITH PAINT FOR PAINTING AT PAINT SHOP	1.00	1570.0
720. (CLEAN) SPRAYGUN FOR PAINTING AT PAINT AREA	1.00	4030.0
Total TMU		8690.0

727. COMBINED SUB-OP

(SET-UP) PAINT POT FOR PAINTING AT PAINT AREA
THIS INCLUDES CLEANING AND FILLING WITH PAINT
PER 1 OPG: 1 08-JUN-83
* 1 MAN OPERATION

TOTAL TMU 16820.0

Combined sub-operation elements	Freq.	TMU
711. SETUP PAINT POT FOR PAINTING AT PAINT AREA	1.00	7290.0
Total TMU		7290.0

718. (CLEAN) PAINT POT FOR PAINTING AT PAINT AREA
PER 1 OFG: 1 03-JUN-83
OF BEGINS AT P-CLEANING
* 1 MAN OPERATION

1 TURN LEVER AT PAINT-POT (AIR OFF) F 2 A1 B0 G1 M3 X0 I0 A0	2.00	100.
2 TURN LEVER AT PAINT-POT (PAINT OFF) F 2 A1 B0 G1 M3 X0 I0 A0	2.00	100.
3 PLACE PAINT-COVER FROM P-CLEANING TO THINNER A1 B0 G1 A1 B0 P3 A0	1.00	60.
4 PLACE RAG TO THINNER A1 B0 G1 A1 B0 P3 A0	1.00	60.
5 WIPE PAINT-POT 3 SQ.FT. USING RAG AND ASIDE A1 B0 G1 A1 B0 P1 S32 A1 B0 P1 A0	1.00	380.
6 OPERATE THINNER AT PAINT-POT (POUR THINNER) A1 B0 G1 M6 X0 I0 A0	1.00	80.
7 PLACE PAINTCOVER TO PAINT-POT A1 B0 G1 A1 B0 P3 A0	1.00	60.
8 TURN LEVER AT PAINT-POT (AIR ON) A1 B0 G1 M3 X0 I0 A0	1.00	50.
9 OPERATE SPRAYGUN AT PAINT-POT PT 120 S A1 B0 G1 M6 X330I0 A0	1.00	3380.
	TOTAL TMU	4270.

732. (PAINT) (OBJECT) IN PAINT BOOTH AT PAINTING AREA
PER 1 OFG: 1 22-JUN-83
* MULTIPLY BY NO. OF FREQUENCIES
* CAN BE 1 OR 2 MAN OPERATION
OF BEGINS AT PAINT-AREA

1 GET+MOVE WITH 10 STEPS SPRAYGUN FROM PAINT-AREA TO PAINT-AREA A16 B0 G3 A1 B0 P1 A0	1.00	210.
2 HOLD+OPERATE SPRAYGUN AT PAINT-AREA A0 B0 G0 M6 X0 I0 A0	1.00	60.
	TOTAL TMU	270.

720. (CLEAN) SPRAYGUN FOR PAINTING AT PAINT AREA
PER 1 OPS: 1 03-JUN-83
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

1 LOOSEN SPRAY-TIP 20 WRIST-TURNS USING FINGERS
A1 B0 G1 A1 B0 P1 L42 A0 B0 P0 A0 1.00 460.
2 REMOVE SPRAY-TIP TO OP
A1 B0 G1 A1 B0 P1 A0 1.00 40.
3 PLACE SPRAY-TIP SPRAYGUN TO THINNER
A1 B0 G1 A1 B0 P3 A0 1.00 60.
4 WIPE SPRAYGUN AT P-CLEANING 1 SQ.FT. USING RAG AND ASIDE
A1 B0 G1 A1 B0 P1 S10 A1 B0 P1 A0 1.00 160.
5 WIPE SPRAY-TIP 1 SQ.FT. USING RAG AND ASIDE
A1 B0 G1 A1 B0 P1 S10 A1 B0 P1 A0 1.00 160.
6 WIPE AIRHOSE AT P-CLEANING WALK 3 STEPS 1 SQ.FT. USING RAG AND ASIDE
F 15
A1 B0 G1 A6 B0 P1 S10 A1 B0 P1 A0 15.00 3150.

TOTAL TMU 4030.

687. (MOVE) PARTS-BOX FOR PAINTING TO PAINT-AREA
PER 1 OPS: 1 18-APR-83
MULTIPLY BY NO OF BOXES,CONTAINERS, OR SEPERATE PIECES
OP BEGINS AT PAINT-AREA

1 GET+MOVE PARTS-BOX FROM TABLE TO PAINT-AREA
A32 B0 G3 A32 B0 P1 A0 1.00 680.

TOTAL TMU 680.

712. FILL (PAINT) GUN WITH PAINT FOR PAINTING AT PAINT SHOP
PER 1 OPS: 1 03-JUN-83
FOR FILLING PAINT CUP AND ATTACH TO SPRAY GUN
OP BEGINS AT P-CLEANING
* 1 MAN OPERATION

1 OPEN PAINTGUN AT P-CLEANING A1 B0 G1 M3 X0 I0 A0	1.00	30.
2 GET+MANIPULATE SCREEN AT SCREENTANK (CLEAN SCREEN) A1 B0 G3 M10 X0 I0 A0	1.00	140.
3 MOVE SPRAYGUN TO P-CLEANING SIMO <A54B0 G1 A54 B0 P1 A0 >	1.00	0.
4 HOLD+POSITION SCREEN TO SPRAYGUN A0 B0 G0 A1 B0 P6 A0	1.00	70.
5 GET+HANDLE MIXCAN AT SPRAYGUN PT 30 S A1 B0 G3 M6 X81 I0 A0	1.00	910.
6 HOLD+PLACE MIXCAN TO P-CLEANING A0 B0 G0 A1 B0 P3 A0	1.00	40.
7 PLACE SCREEN TO SCREENTANK AND ASIDE A1 B0 G1 A1 B0 P3 A0	1.00	60.
8 PLACE SPRAYGUN TO SPRAYGUN AND ASIDE A1 B0 G1 A1 B0 P3 A0	1.00	60.
9 GET+WIPE SPRAYGUN 2 SQ.FT. USING RAG AND ASIDE A1 B0 G3 A1 B0 P1 S16 A1 B0 P1 A0	1.00	240.
TOTAL TMU		1570.

719. (OPEN+CLOSE) PAINT POT FOR FILLING AND CLEANING AT PAINT AREA
PER 1 OPS: 1 03-JUN-93
AD TO CLEAN OR FILLING PAINT POT SUB-OP
OP BEGINS AT P-CLEANING
* 1 MAN-OPERATION

1 POSITION CRESENTWRENCH TO PAINT-POT F 2													
						A1	B0	G1	A1	B0	P6	A0	2.00	180.
2 HOLD+LOOSEN 4 WINGNUTS AT P-CLEANING 4 ARM-STROKES USING CRESENTWRENCH AND ASIDE													
A0	B0	G0	A0	B0	(P3	A1	L24	)A1	B0	P1	A0	(4)	1.00	1140.
3 LOOSEN 4 WINGNUTS AT P-CLEANING 8 WRIST-TURNS USING FINGERS													
A1	B0	G1	A0	B0	(P1	A1	L16	)A0	B0	P0	A0	(4)	1.00	740.
4 FASTEN 4 WINGNUTS AT P-CLEANING 8 WRIST-TURNS USING FINGERS													
A1	B0	G1	A0	B0	(P1	A1	F16	)A0	B0	P0	A0	(4)	1.00	740.
5 HOLD+FASTEN 4 WINGNUTS AT P-CLEANING 6 ARM-STROKES USING CRESENTWRENCH AND ASIDE													
A0	B0	G0	A0	B0	(P3	A1	F32	)A1	B0	P1	A0	(4)	1.00	1460.

TOTAL TMU 4260.